

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES SECTION**

PART VI –C (ARCHIVES)

WATERBODY MANAGEMENT PLAN SERIES

KEPLER LAKE

**AQUATIC VEGETATION TYPE MAPS
AND NARRATIVES 1980 - 2018**

Aquatic Vegetation Type Maps and Narratives

Kepler Lake – Aquatic Vegetation Type Map and Narrative - 1980

Kepler Lake August
1980

Kepler was under a drawdown when the survey was made. The lake was down four feet. The water was clear and no plankton bloom was noticed.

The major submersed plants listed in order of importance are Brazilian elodea (*Egeria densa*), and fanwort (*Cabomba caroliniana*). No other plants were observed during survey. Brazilian elodea (*Egeria densa*) covered an area at the dam and fanwort (*Cabomba caroliniana*) was observed in all other areas.

The major marginal plants were rush (*Juncus spp.*) and American lotus (*Nelumbo lutea*). American lotus (*Nelumbo lutea*) covered about a two acre area in about the middle portion of the lake.

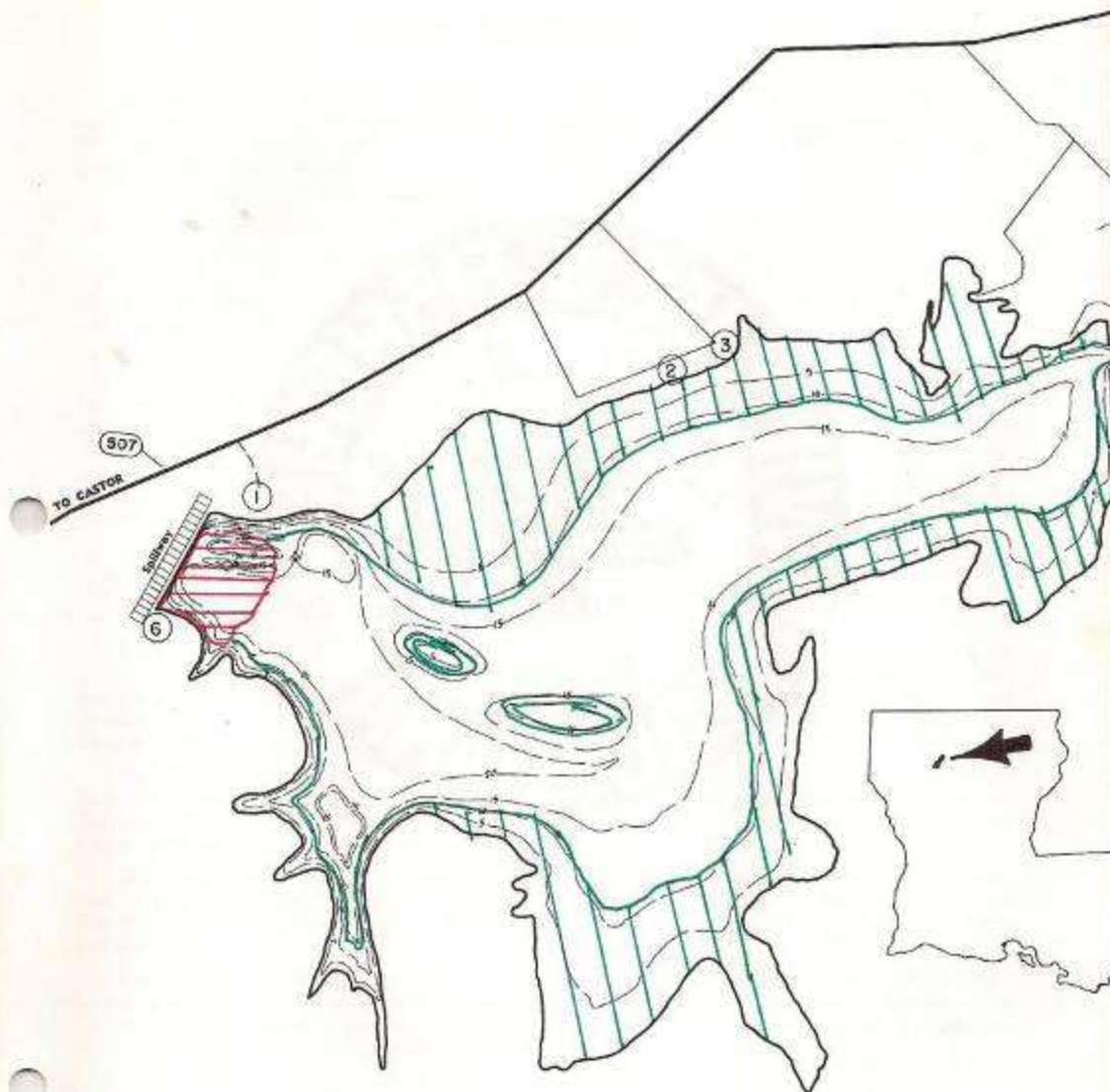
At the time of the survey, Kepler has a severe plant problem.

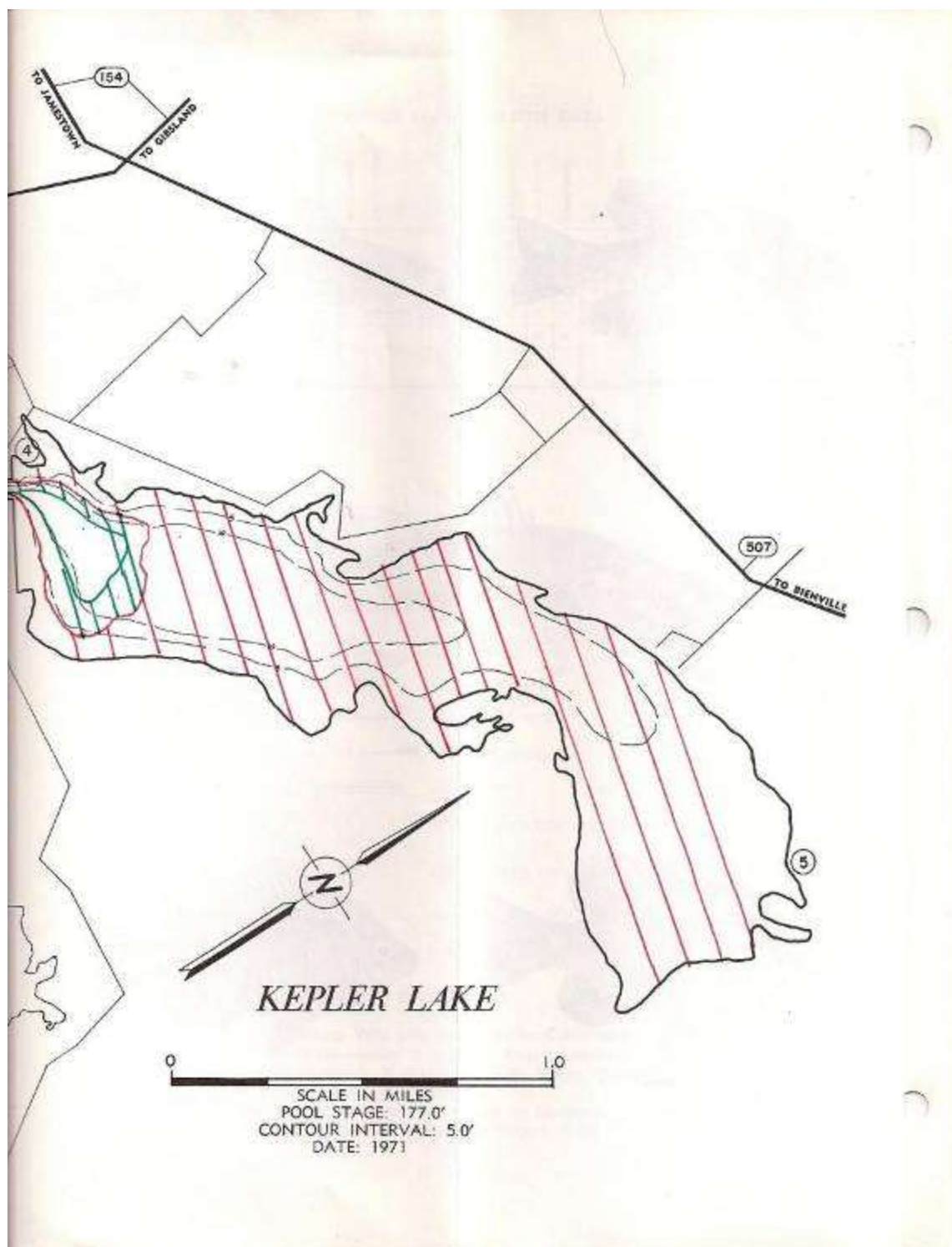
Melvin Bagwell Aquatic
Specialist

Above text transcribed from original document and corrected by James Seales, January 2012.

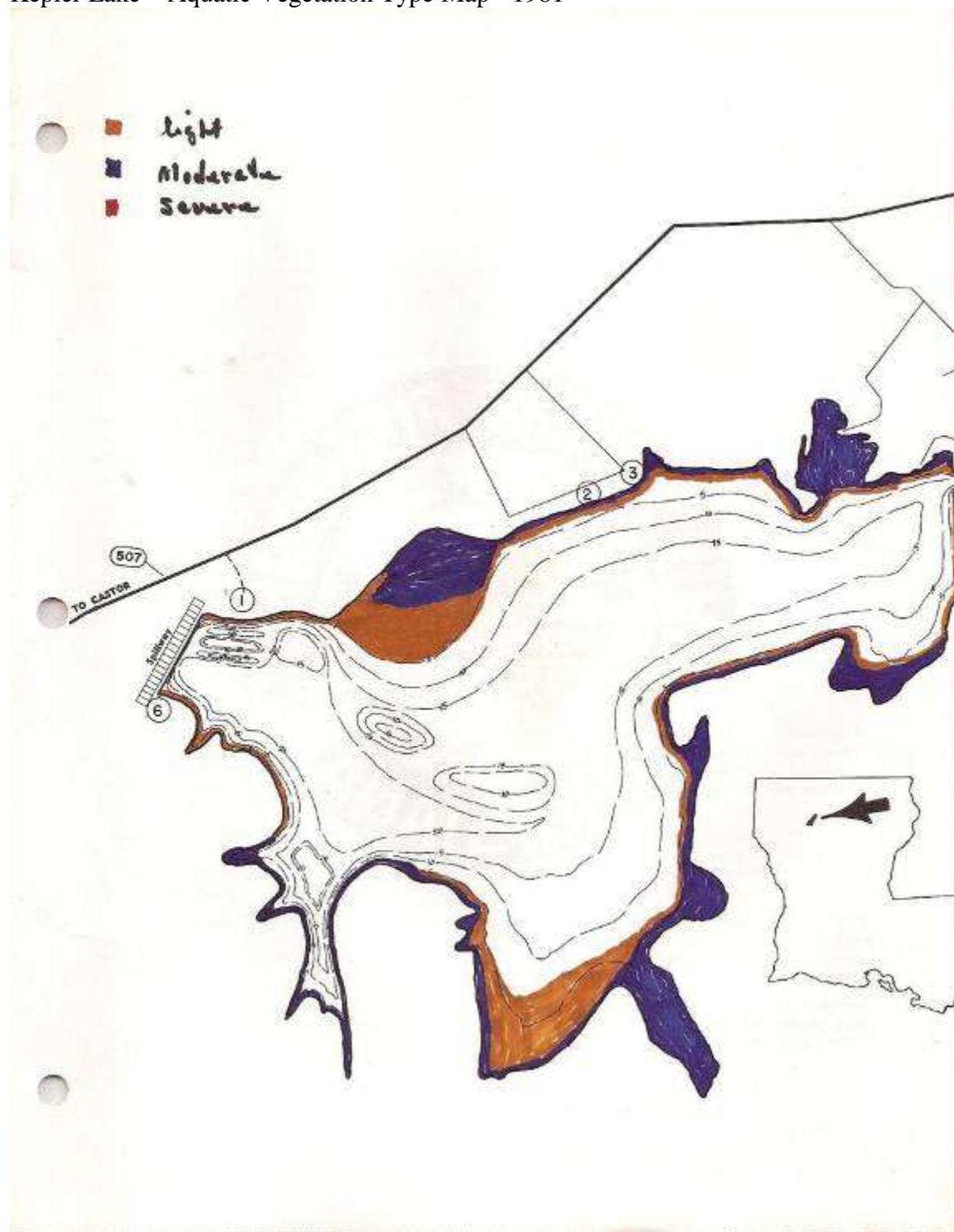
August 1980

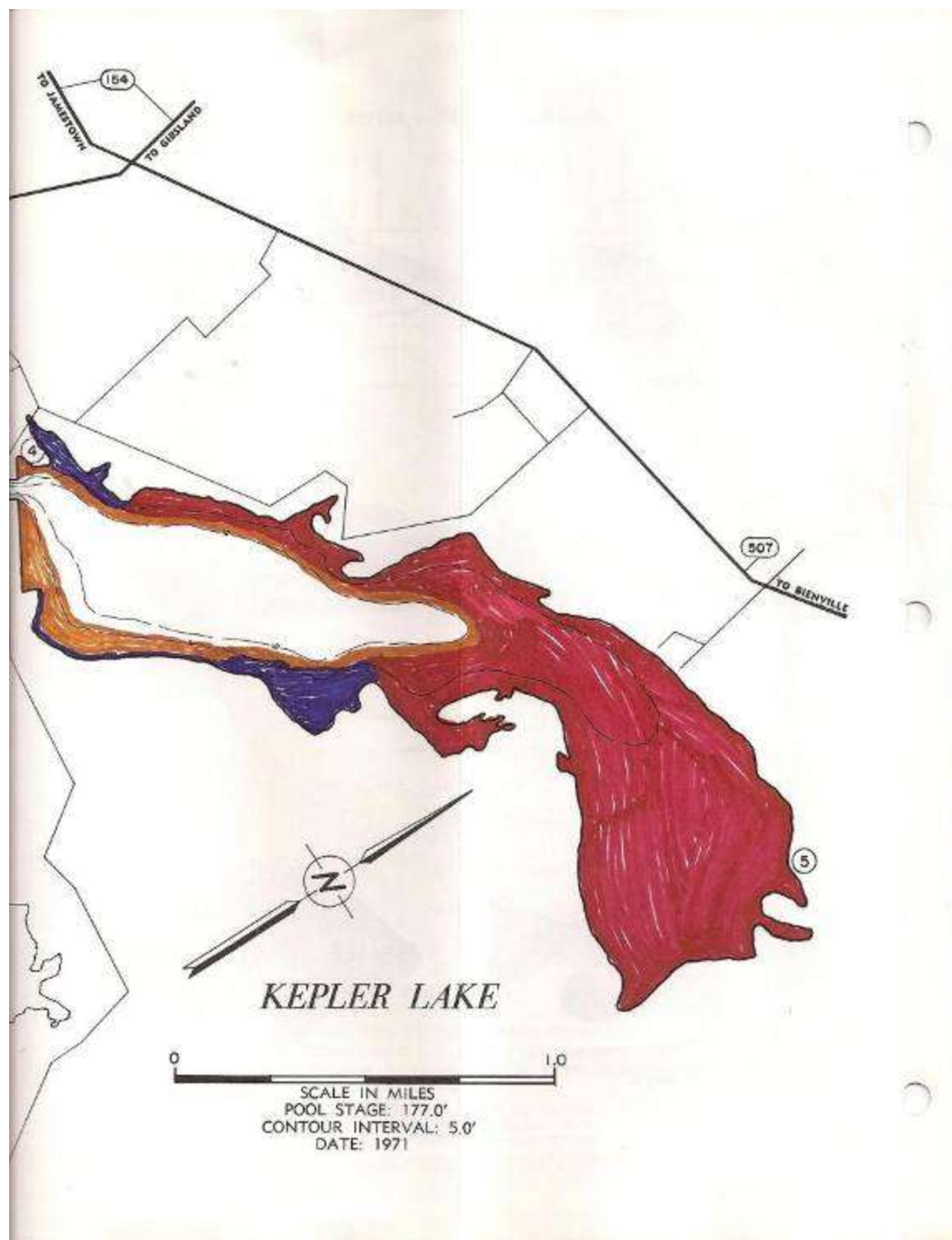
light
moderate
dense





Kepler Lake – Aquatic Vegetation Type Map - 1981





Kepler Lake – Aquatic Vegetation Type Map and Narrative – 1982

KEPLER LAKE 1982

At the time of assessment and type map, Kepler Lake was at pool stages. The color of the water was murky. There was some algae bloom present. The reason for the color could be because of locally heavy rainfall.

The dam has a crack in it. I could not judge how badly damaged it is.

The submersed species noted were fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*), bladderwort (*Utricularia* spp.), Brazilian elodea (*Egeria densa*), and muskgrass (*Chara* spp.). There was a severe infestation in the extreme upper end which consisted of fanwort (*Cabomba caroliniana*), bladderwort (*Utricularia* spp.), and coontail (*Ceratophyllum demersum*), with the primary species being fanwort (*Cabomba caroliniana*) and bladderwort (*Utricularia* spp.). The light and moderate infestations consisted primarily of bladderwort (*Utricularia* spp.) and muskgrass (*Chara* spp.) with some fragments of fanwort (*Cabomba caroliniana*) in the mid-portion and with some fragments of Brazilian elodea (*Egeria densa*) in the area next to the dam. Some muskgrass (*Chara* spp.) was found in all areas.

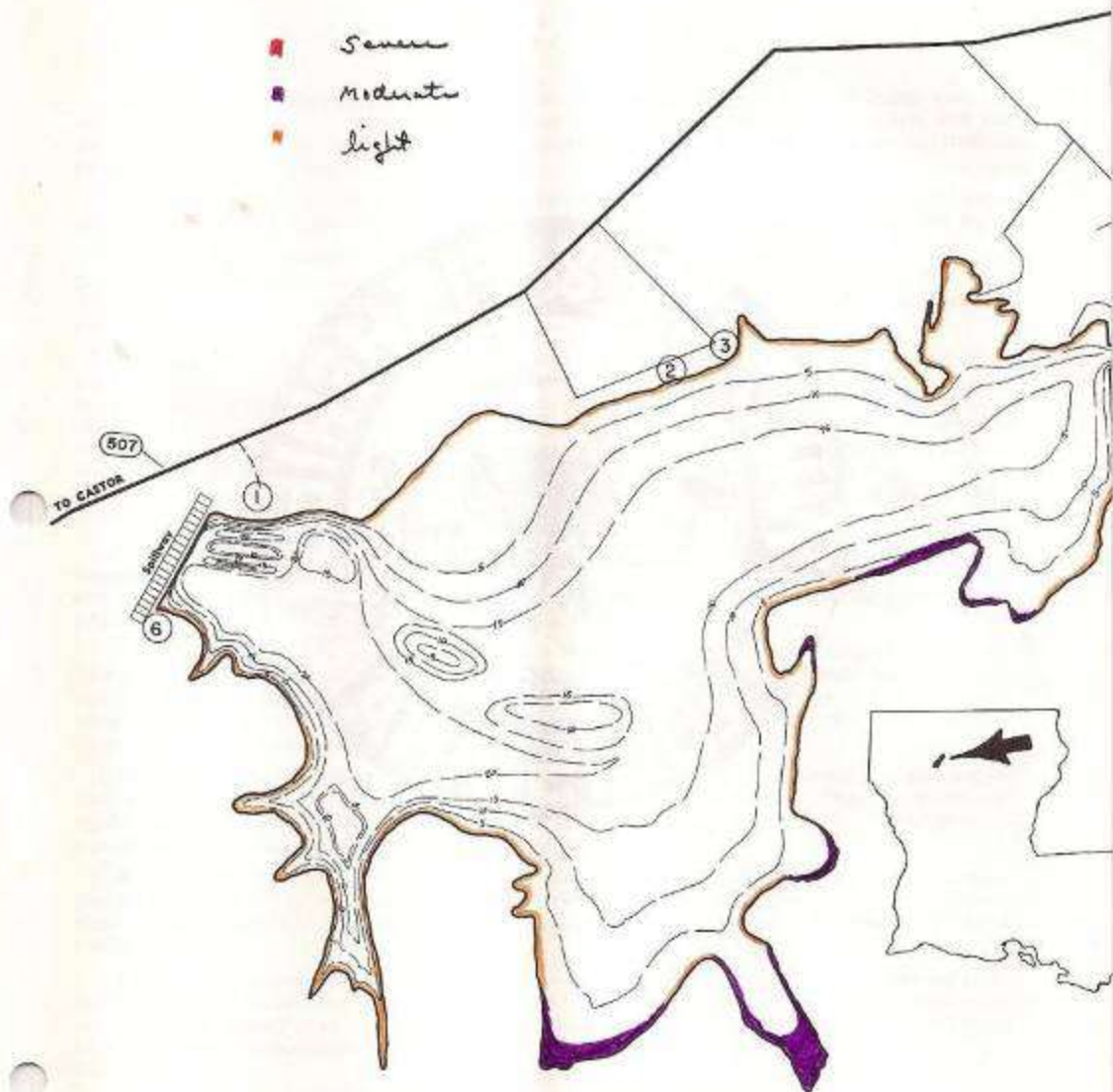
There was an infestation of American lotus (*Nelumbo lutea*) in one area on the east side below the bridge.

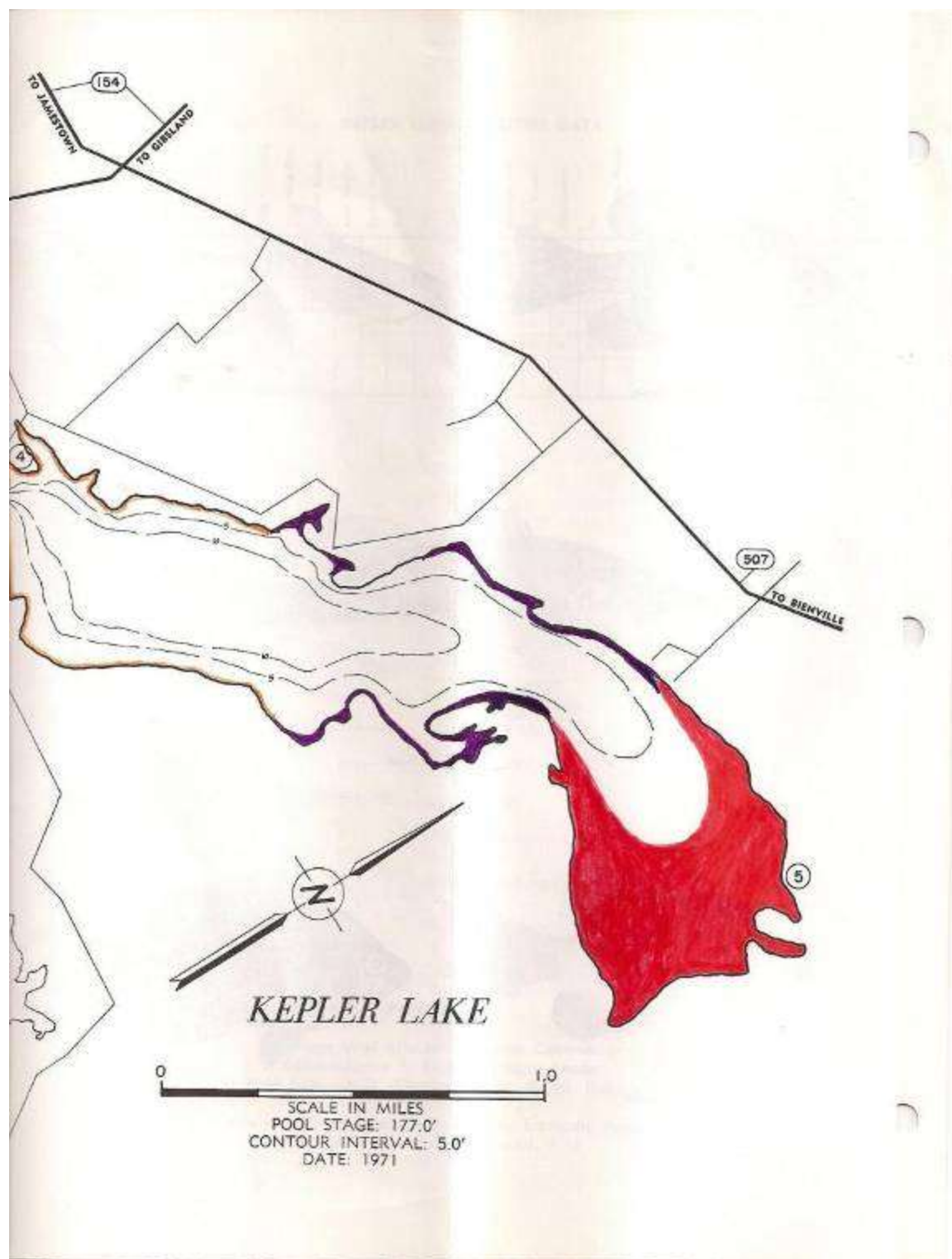
The drawdown also got rid of some of the stumps in all areas. The lake as a whole has a lot less stumps.

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August 1982

- Severe
- Moderate
- light





Kepler Lake – Aquatic Vegetation Type Map and Narrative – 1983

KEPLER LAKE
1983

At the time of assessment Kepler Lake was at pool stage. The color of the water was very clear. Some plankton blooms were noted in the upper portion of the lake.

The severe infestation as indicated on the type map, are comprised of fanwort (*Cabomba caroliniana*), milfoil (*Myriophyllum spp.*), bladderwort (*Utricularia spp.*), and filamentous algae.

The moderate infestations noted were comprised of fanwort (*Cabomba caroliniana*) and milfoil (*Myriophyllum spp.*).

The light infestations noted were comprised of bladderwort (*Utricularia spp.*), pondweed (*Potamogeton spp.*), filamentous algae and fragments of fanwort (*Cabomba caroliniana*).

There were no floating plants noted in Kepler Lake.

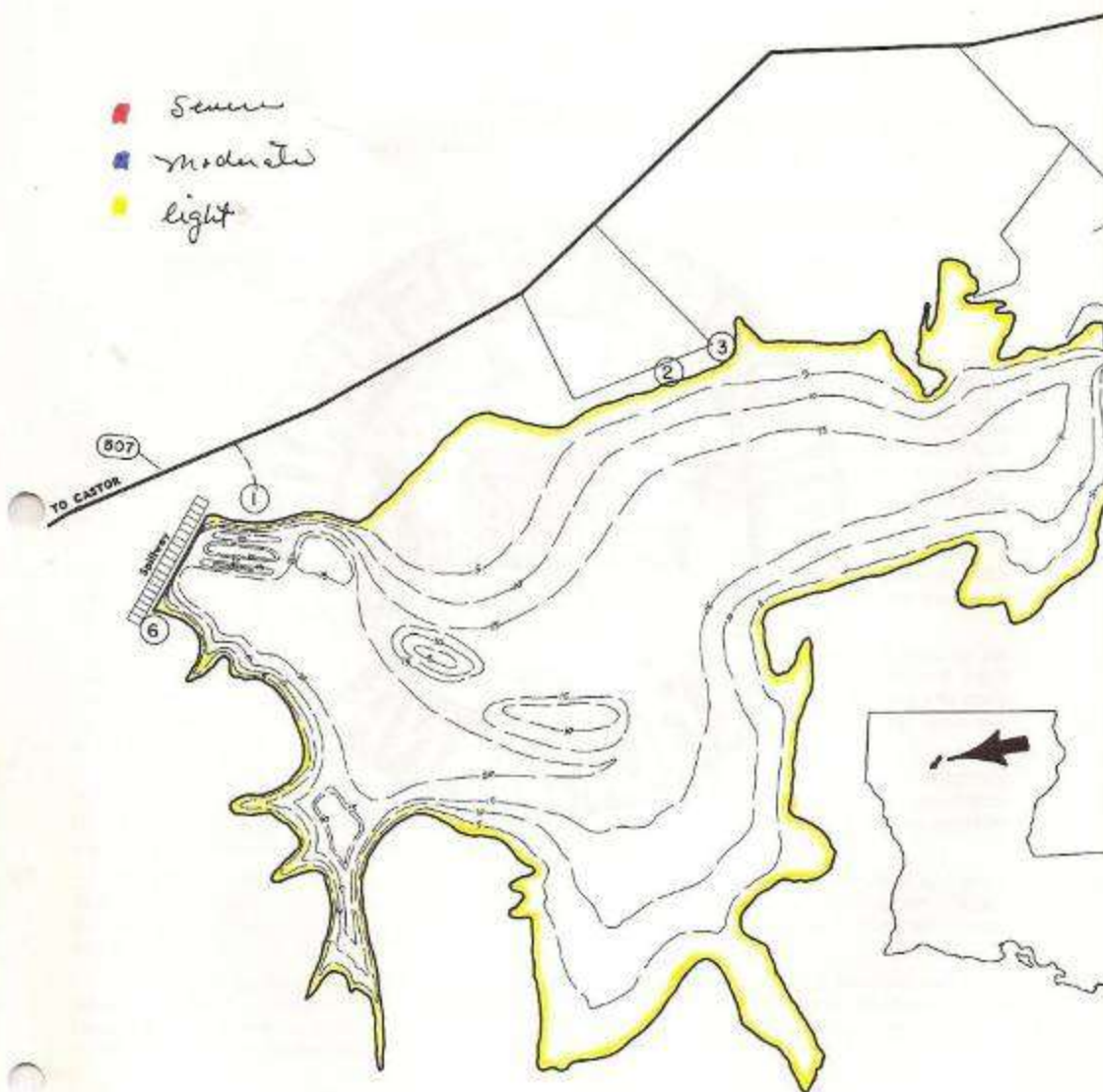
The emersed plants noted were American lotus (*Nelumbo lutea*), and they were in an area about one acre in size in the mid portion of the lake.

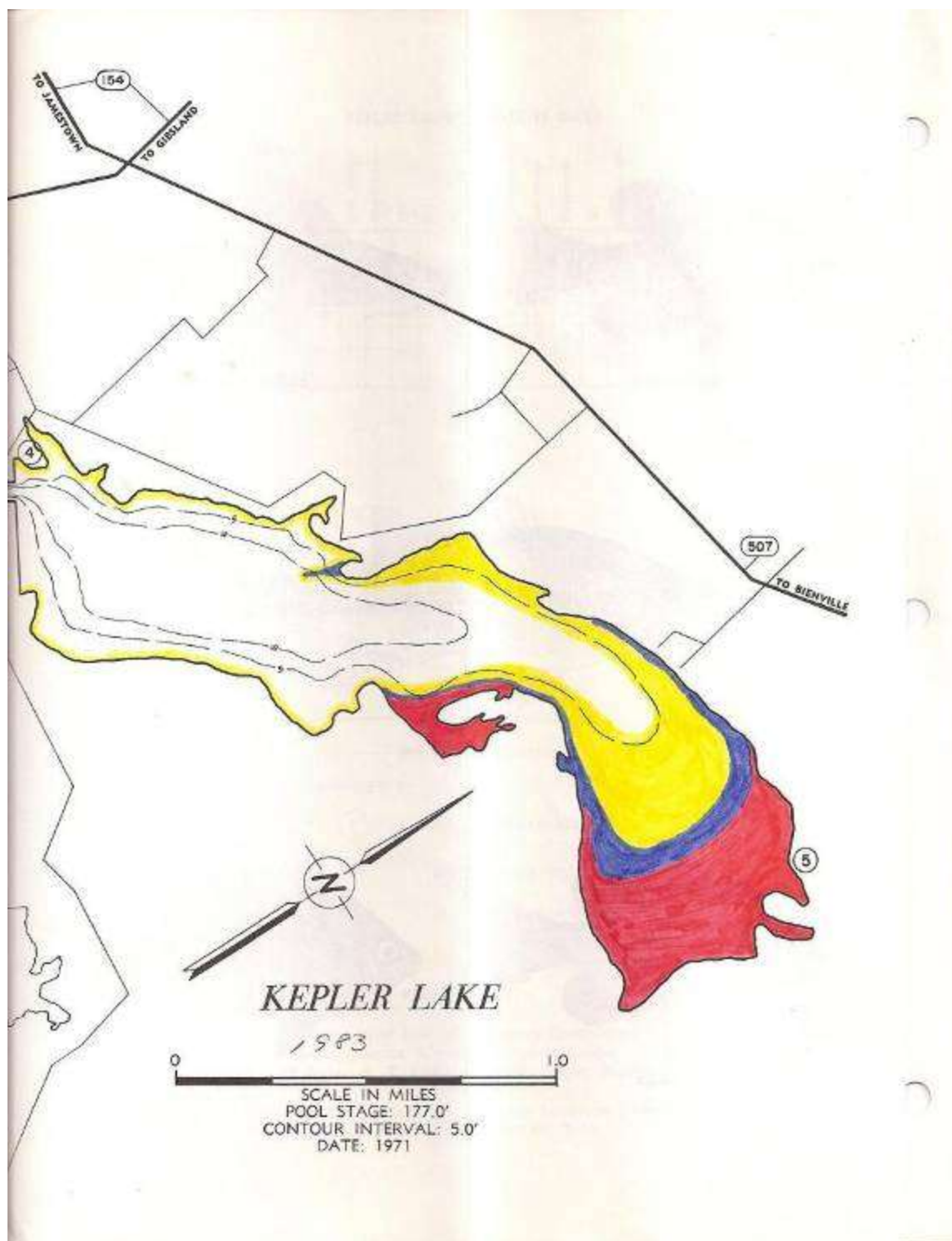
Marginal plants were fiddleleaf (*Hydrolea spp.*), buttonbush (*Cephalanthus occidentalis*), arrowhead (*Sagittaria spp.*), smartweed (*Polygonum spp.*), and miscellaneous grasses.

In summary Kepler Lake is in good condition. There has been no significant increase in submersed plants since last year. The emersed plants have decreased somewhat. Marginal plants have not increased and they are in tolerable numbers.

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- severe
- moderate
- light





Kepler Lake – Aquatic Vegetation Type Map and Narrative – 1984

Kepler Lake 1984

At the time of assessment Kepler Lake was at pool stage. There was little plankton bloom noted in any area. Some filamentous algae was noted in almost all areas.

The severe infestations as noted on the type map were comprised of fanwort (*Cabomba caroliniana*), milfoil (*Myriophyllum spp.*), coontail (*Ceratophyllum demersum*), and bladderwort (*Utricularia spp.*). In almost all areas the aforementioned plants were mixed in the infestation.

The moderate infestations consisted of fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*), and bladderwort (*Utricularia spp.*).

The light infestations consisted of fanwort (*Cabomba caroliniana*), bladderwort (*Utricularia spp.*), and pondweed (*Potamogeton spp.*) In some areas of light infestation the plants were fragmented.

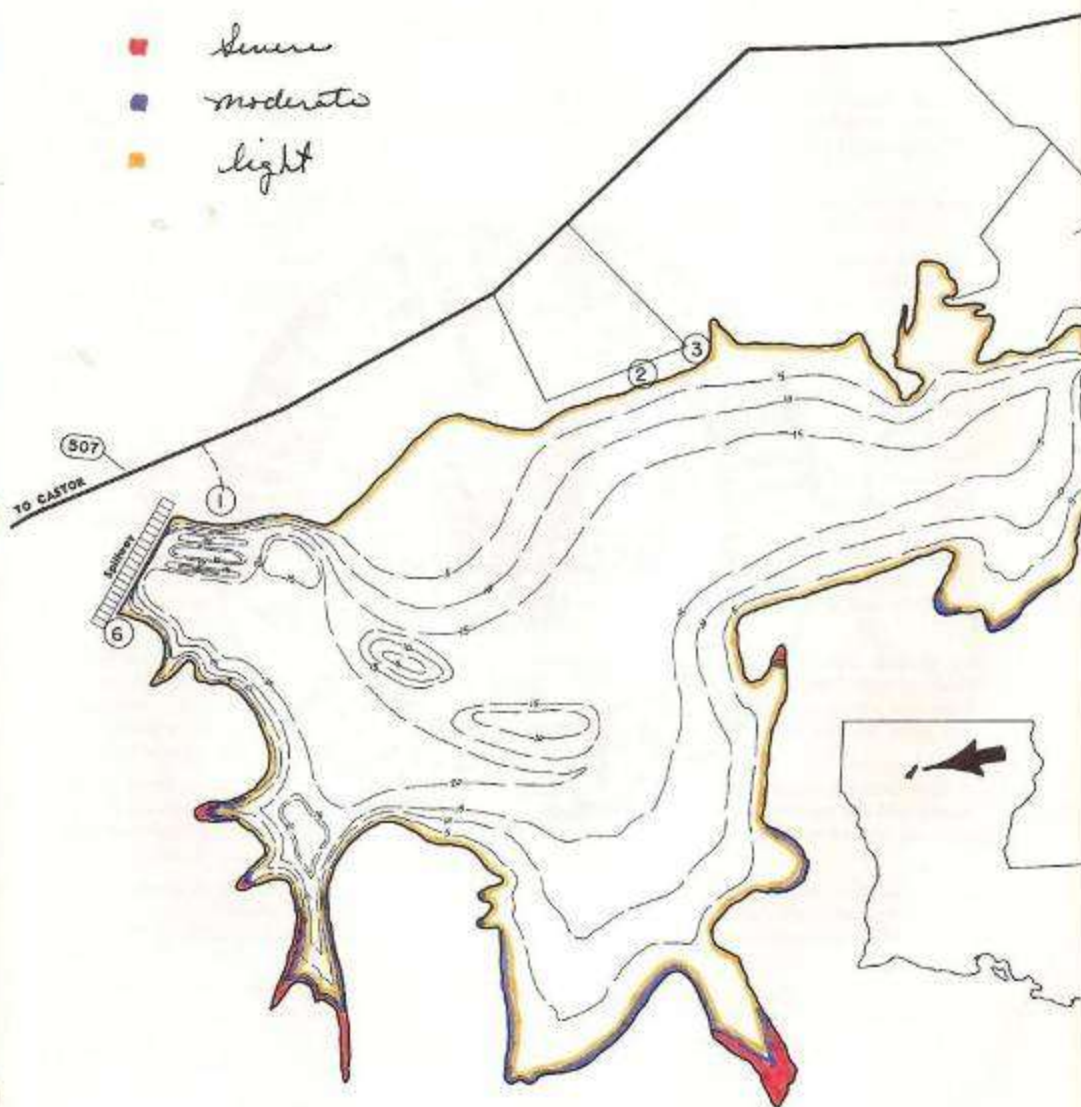
The marginal plants noted were buttonbush (*Cephalanthus occidentalis*), willow (*Salix spp.*), spikerush (*Eleocharis spp.*), bald cypress (*Taxodium distichum*), cattail (*Typha spp.*), fiddleleaf (*Hydrolea spp.*), water primrose (*Ludwigia octovalvis*), and one spot of alligator-weed (*Alternanthera philoxeroides*).

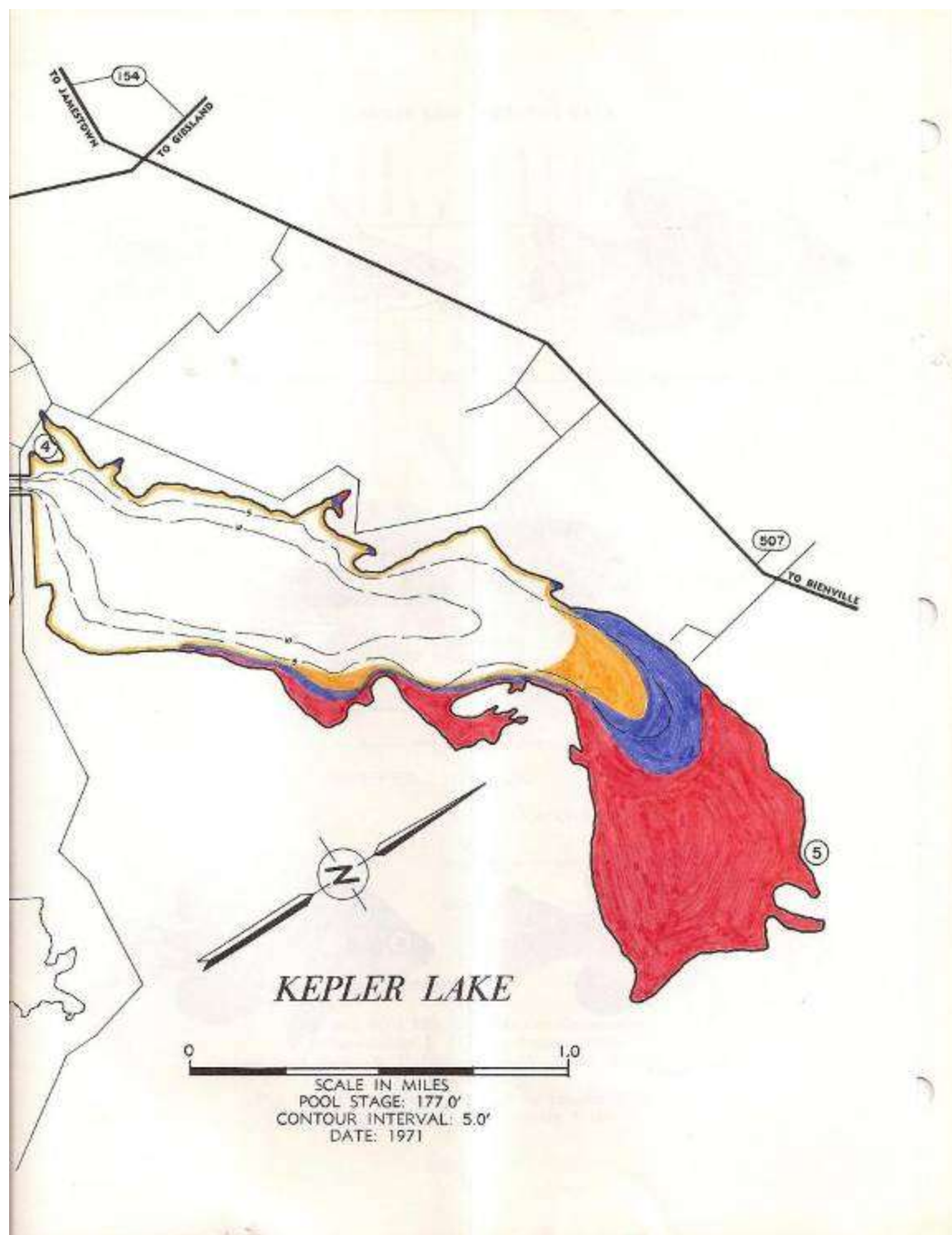
In summary Kepler Lake is in fair to poor condition. The aquatic plants have increased as anticipated. With the exception of the upper end, all areas of Kepler Lake are accessible to fishermen and boaters.

Melvin Bagwell
WLF Sp. 4

Above text transcribed from original document and corrected by James Seales, January 2012.

- severe
- moderate
- light





Kepler Lake – Aquatic Vegetation Type Map and Narrative – 1988

KEPLER LAKE
1988

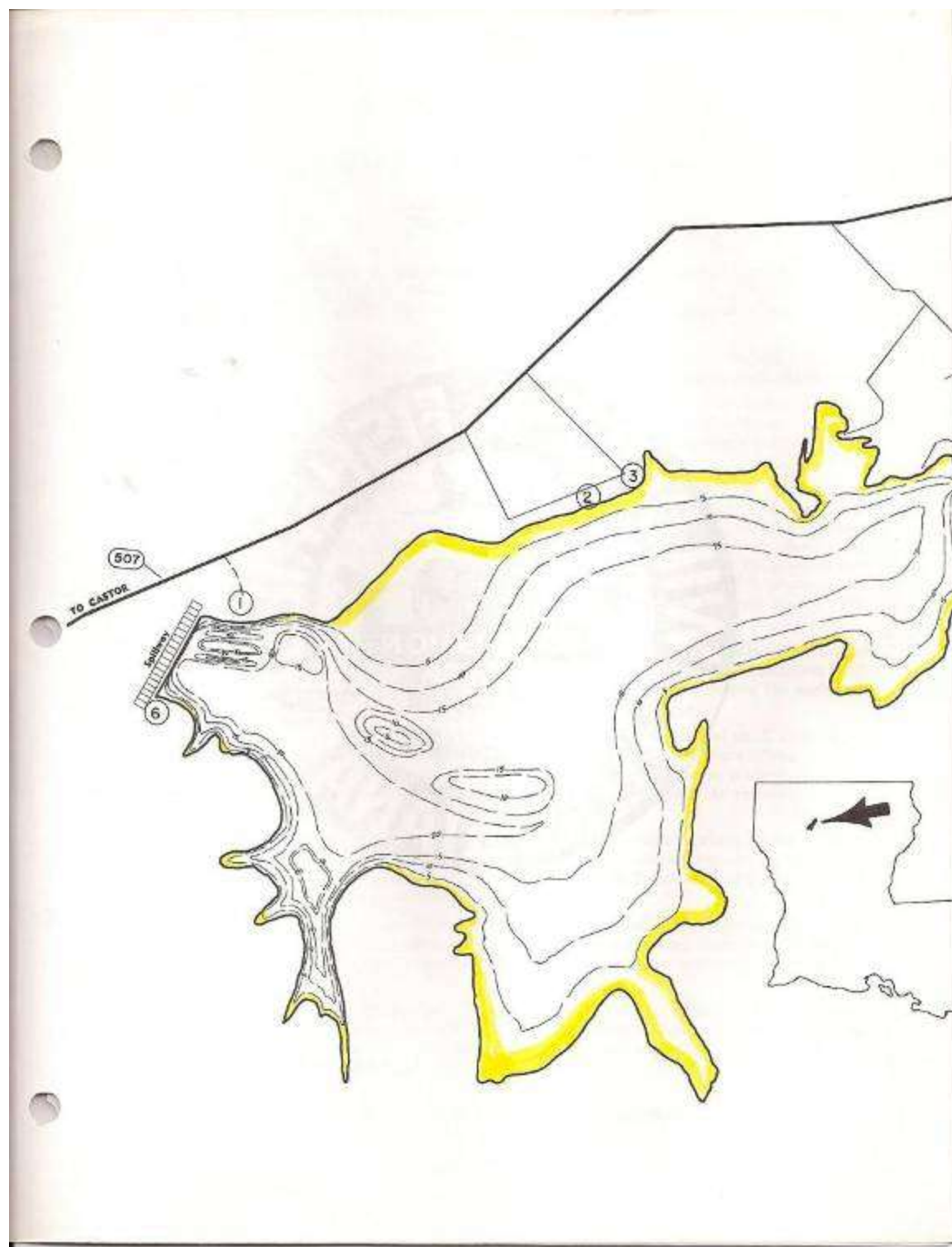
At the time of assessment Kepler Lake was at pool stage. Water color was fair in all areas except the upper end which was very clear.

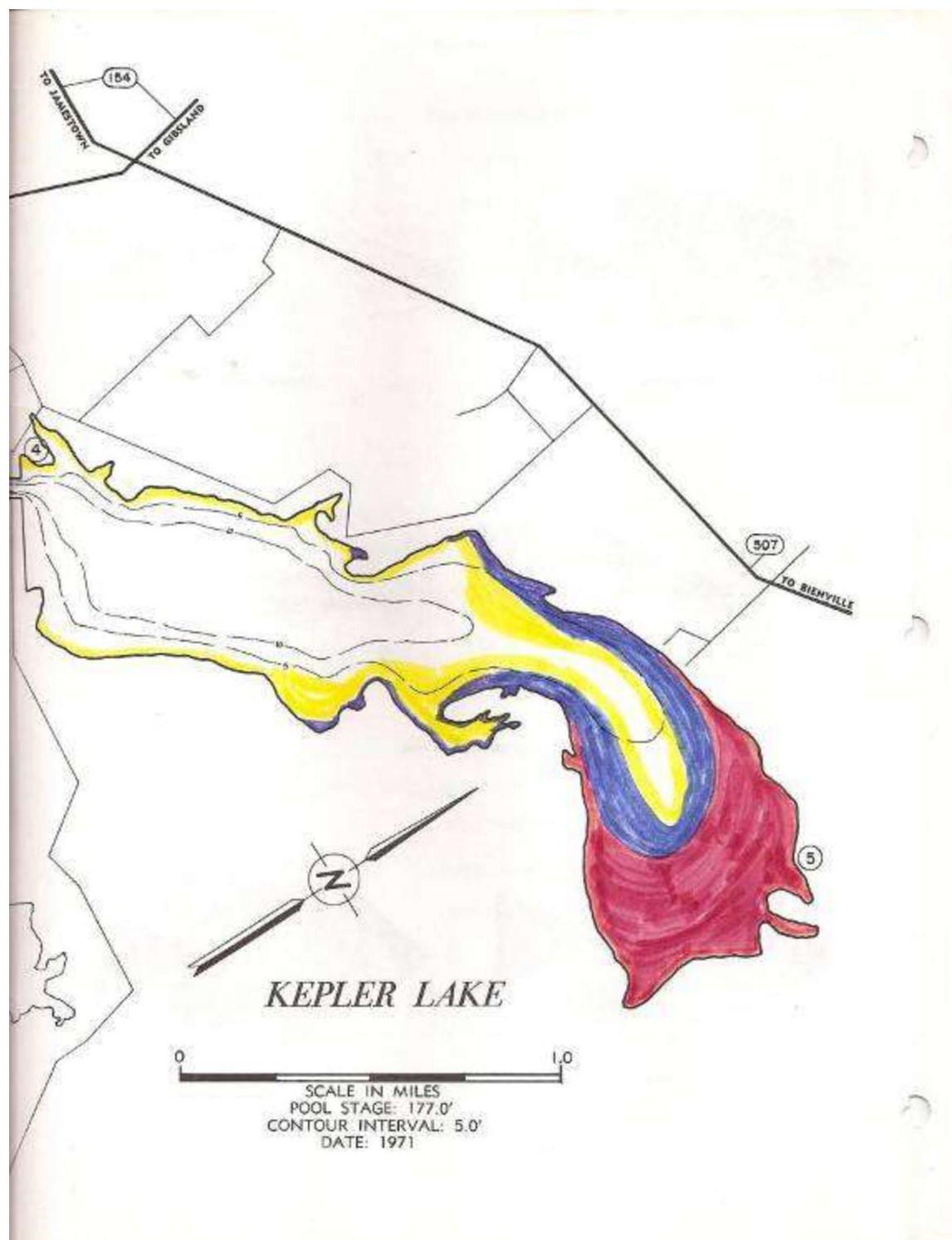
The submersed aquatic plants noted were fanwort (*Cabomba caroliniana*), Brazilian elodea (*Egeria densa*), coontail (*Ceratophyllum demersum*), bladderwort (*Utricularia* spp.), and southern naiad (*Najas guadalupensis*).

The emergent plant noted was American lotus (*Nelumbo lutea*).

In summary Kepler Lake is in fair condition. There has been no increase in aquatic plants this season and there has been some decrease in a few small areas in the upper end. The Brazilian elodea (*Egeria densa*) noted was in the area of the dam and seems to be isolated there, although in past years it has been found in infestations all over the lower portion of the lake. The severe infestations were primarily fanwort (*Cabomba caroliniana*) and bladderwort (*Utricularia* spp.). The moderate infestations were fanwort (*Cabomba caroliniana*), bladderwort (*Utricularia* spp.), coontail (*Ceratophyllum demersum*) and southern naiad (*Najas guadalupensis*).

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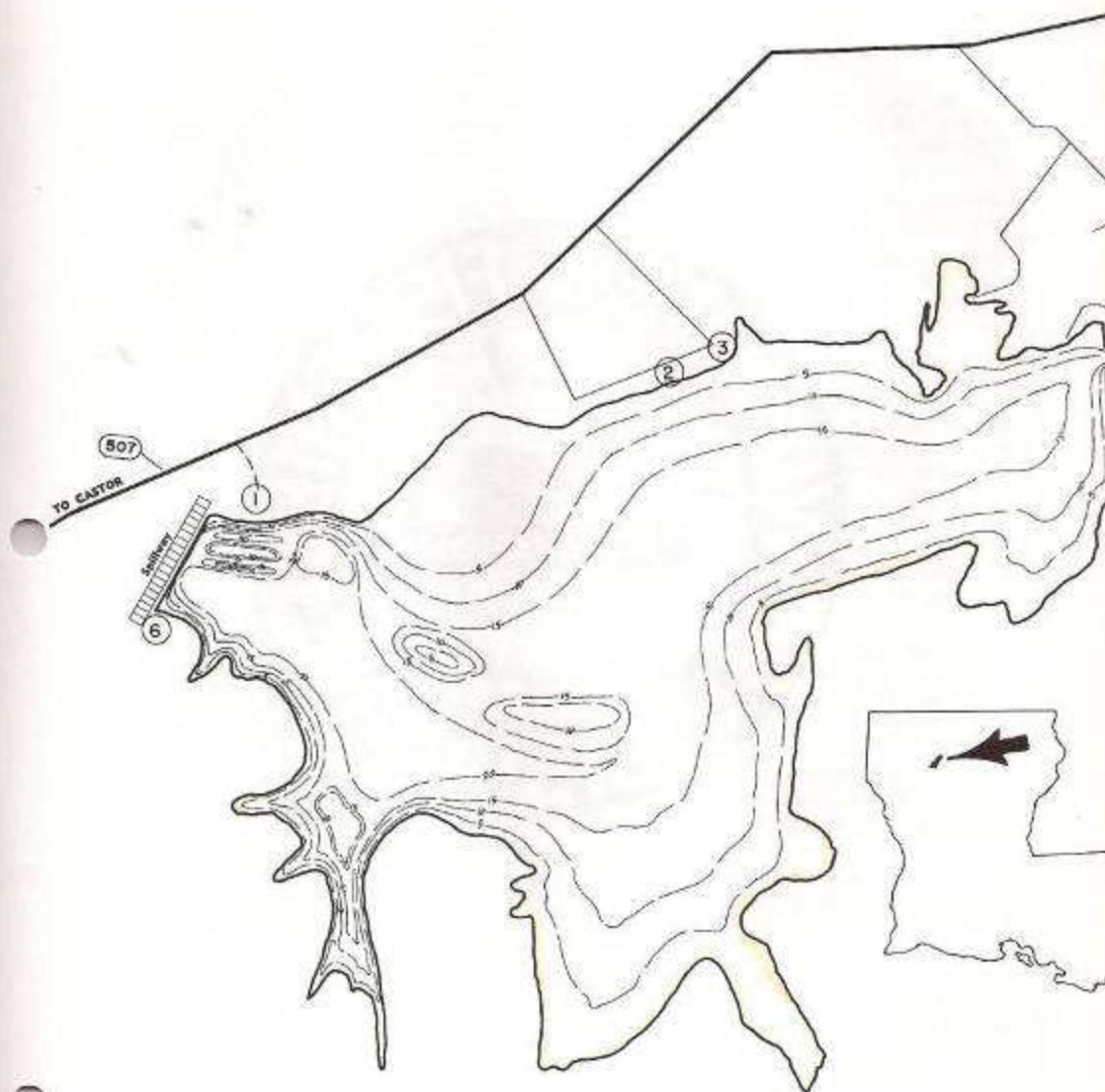
KEPLER LAKE
1989

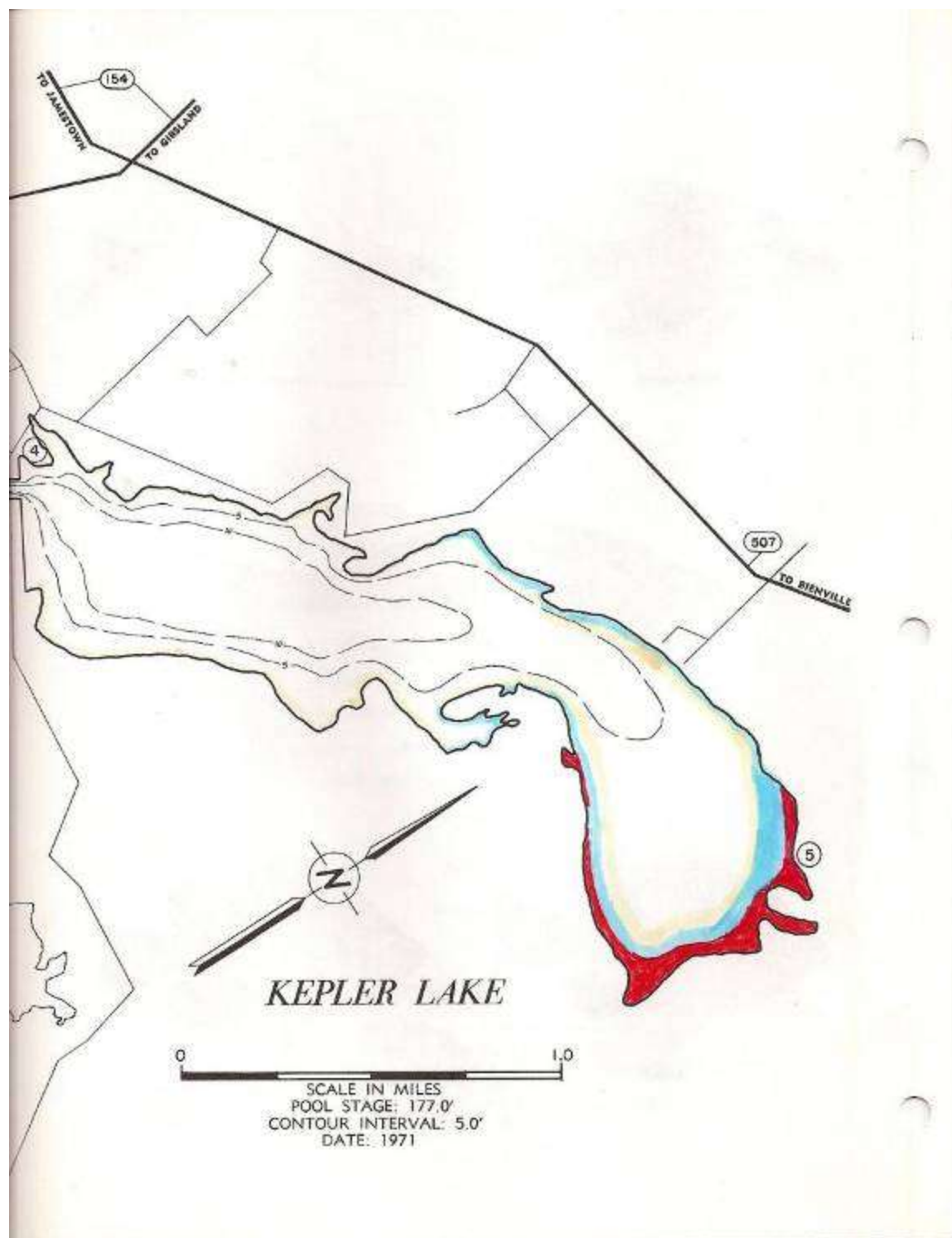
Kepler Lake, Bienville Parish, was assessed in August, 1989. The color of the water in Kepler Lake was a turbid brown color and the lake level was at pool stage. The Secchi disc reading was thirty eight inches (38"). Kepler Lake was subject to flood water in early summer. Flood water in excess of five (5') feet covered for a period of about four days then subsided.

The dominant plant in the upper half of Kepler Lake was fanwort (*Cabomba caroliniana*). Other plants noted were bladderwort (*Utricularia spp.*) and southern naiad (*Najas guadalupensis*). Small amounts of coontail (*Ceratophyllum demersum*) and filamentous algae were also noted.

The dominant plant in the lower half of Kepler Lake was southern naiad (*Najas guadalupensis*). Small amounts of Brazilian elodea (*Egeria densa*) were noted around the public landing and the dam area.

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Kepler Lake – Aquatic Vegetation Type Map and Narrative – 1990

Kepler Lake 1990

Kepler Lake, Bienville Parish, was assessed in August 1990. At the time of assessment Kepler Lake was 2 inches below normal. The water color was turbid brown color in the lower half of the lake and clear in the upper end.

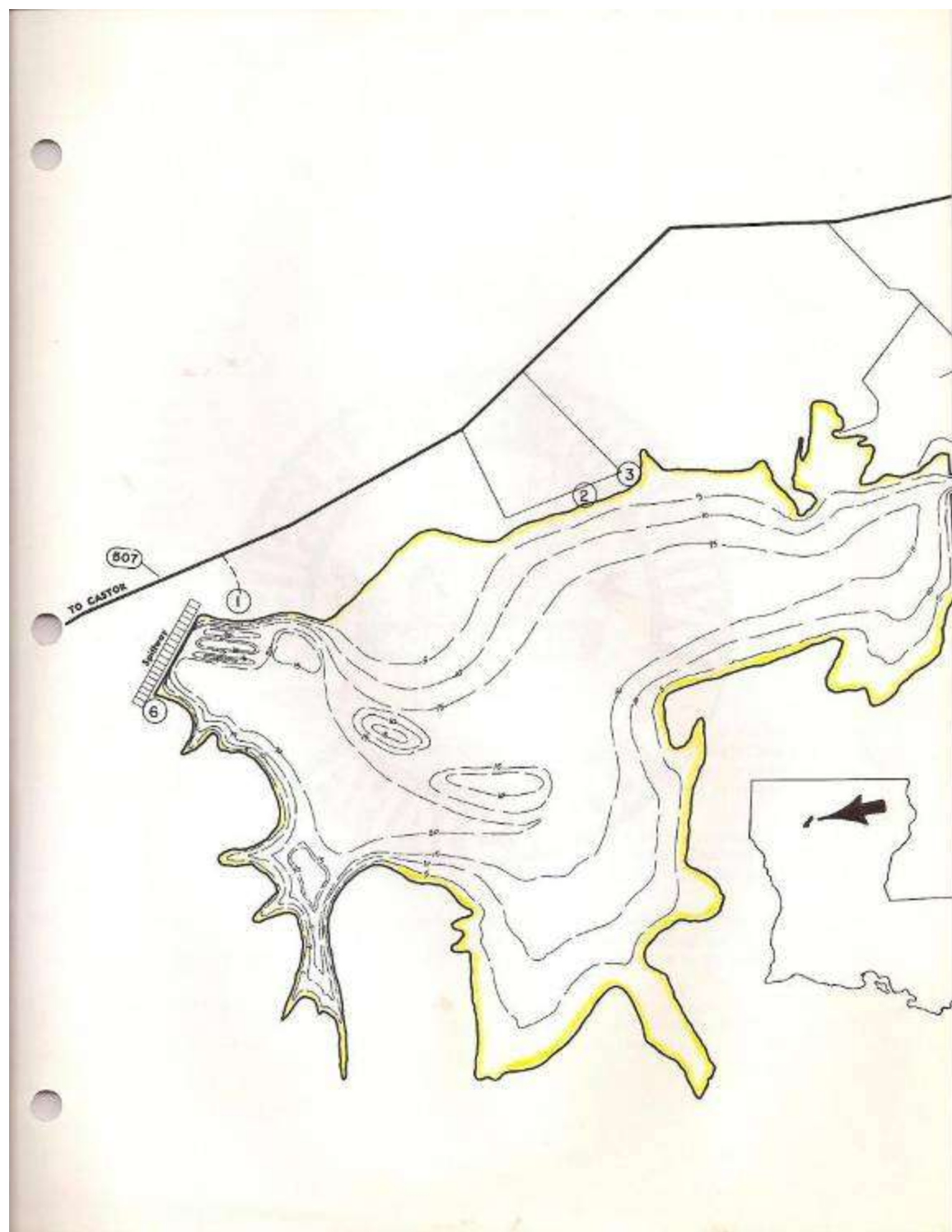
The dominant plant in the upper half of Kepler Lake was fanwort (*Cabomba caroliniana*). Secondary plants were bladderwort (*Utricularia spp.*), Variable-leaf milfoil (*Myriophyllum heterophyllum*), and Brazilian elodea (*Egeria densa*).

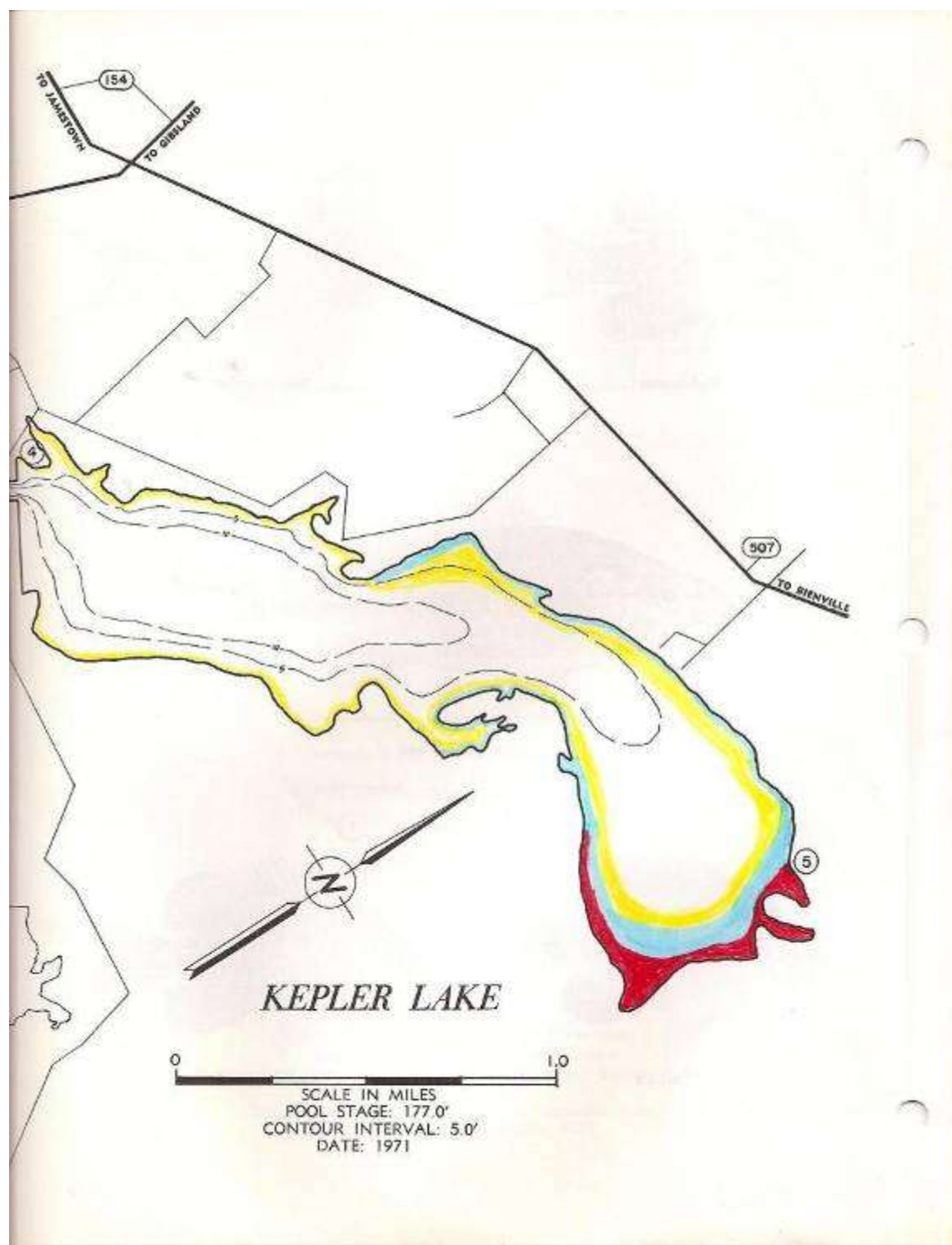
The dominant plant in the lower half of Kepler Lake was bladderwort (*Utricularia spp.*). Secondary plants were fanwort (*Cabomba caroliniana*), Brazilian elodea (*Egeria densa*), and naiad (*Najas spp.*).

The emergent plants noted were American lotus (*Nelumbo lutea*), smartweed (*Polygonum spp.*), water primrose (*Ludwigia octovalvis*), cattail (*Typha spp.*) and miscellaneous grasses and sedges.

The submersed aquatic plant infestation in the upper half of the lake ranged from light to severe in the extreme end of the lake. The infestations in the lower half were light.

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Kepler Lake – Aquatic Vegetation Type Map and Narrative – 1991

KEPLER LAKE 1991

At the time of assessment Kepler Lake was at pool stage. The water color showed some turbidity and a fair amount of plankton. The secchi disc reading was 36 inches.

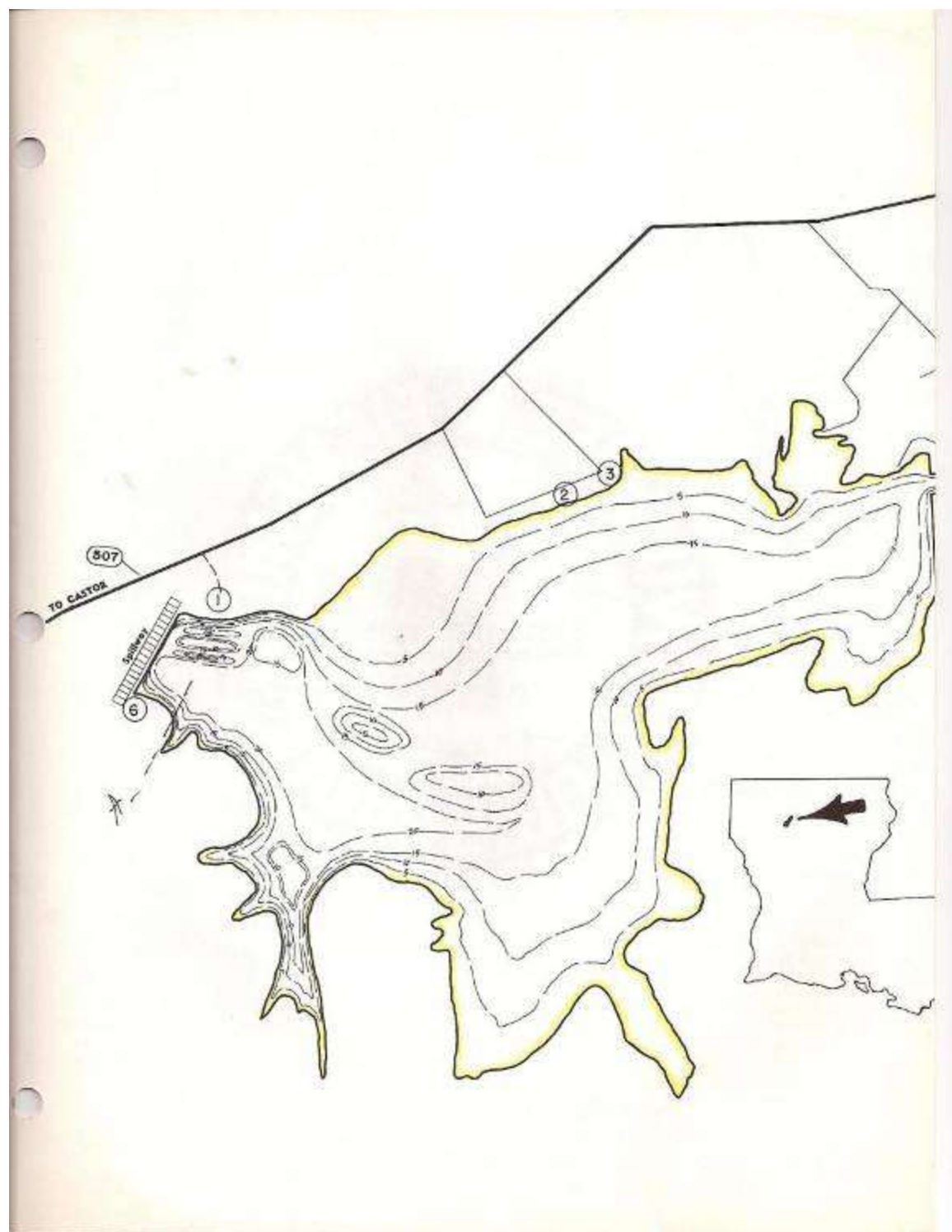
The submersed aquatic plants noted were fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*), bladderwort (*Utricularia spp.*), Variable-leaf milfoil (*Myriophyllum heterophyllum*), muskgrass (*Chara spp.*), and southern naiad (*Najas guadalupensis*).

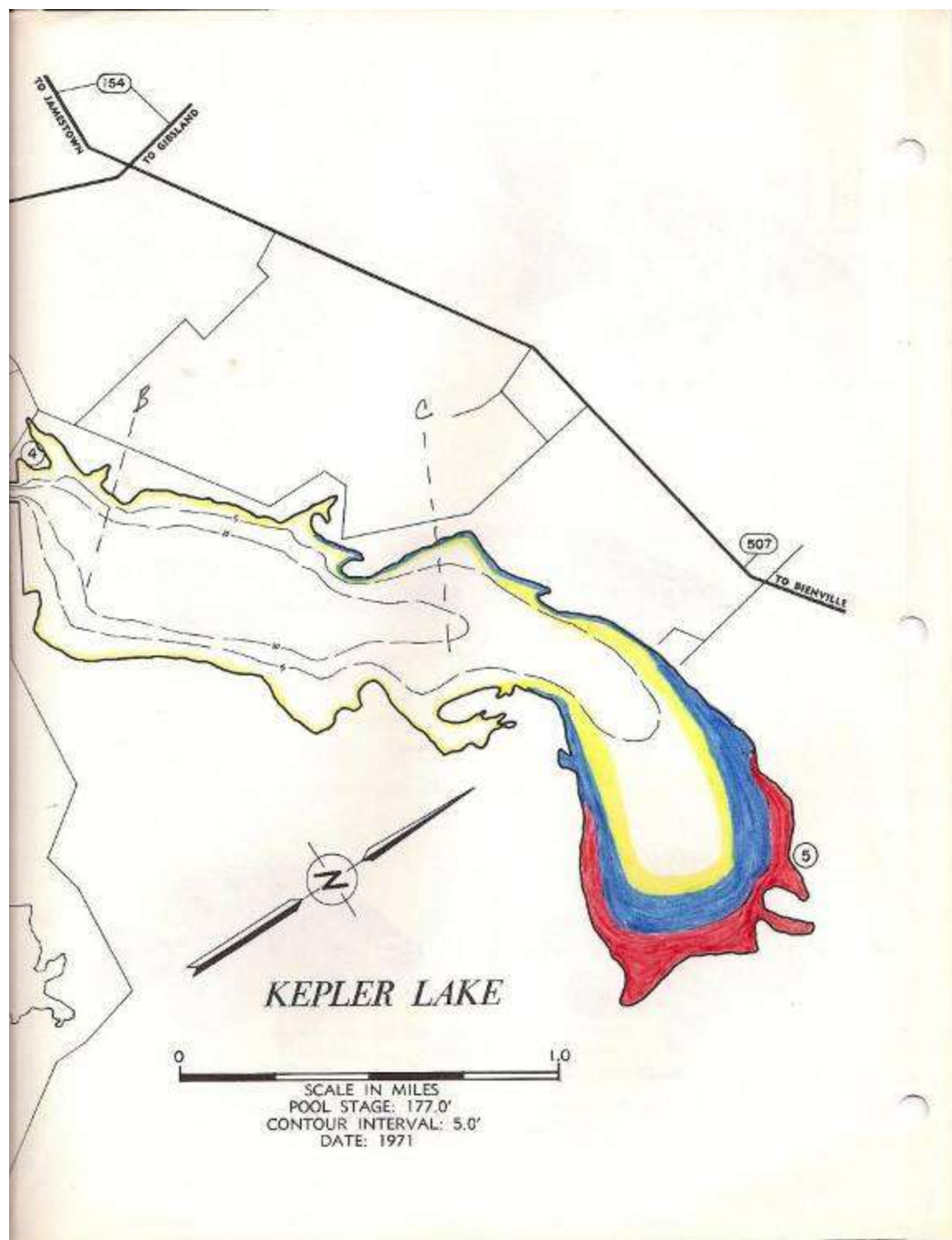
The emersed plants noted were American lotus (*Nelumbo lutea*), fragrant water lily (*Nymphaea odorata*), cattail (*Typha spp.*), and smartweed (*Polygonum spp.*).

In summary Kepler Lake has one area of severely infested aquatic plants in the upper end and also some area of moderate infestation. The mid and lower portion of the lake have light infestations. Kepler Lake was subjected to flooding in the early spring with levels reaching 4 feet above pool stage.

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Kepler Lake – Aquatic Vegetation Type Map and Narrative – 1992

Kepler Lake 1992

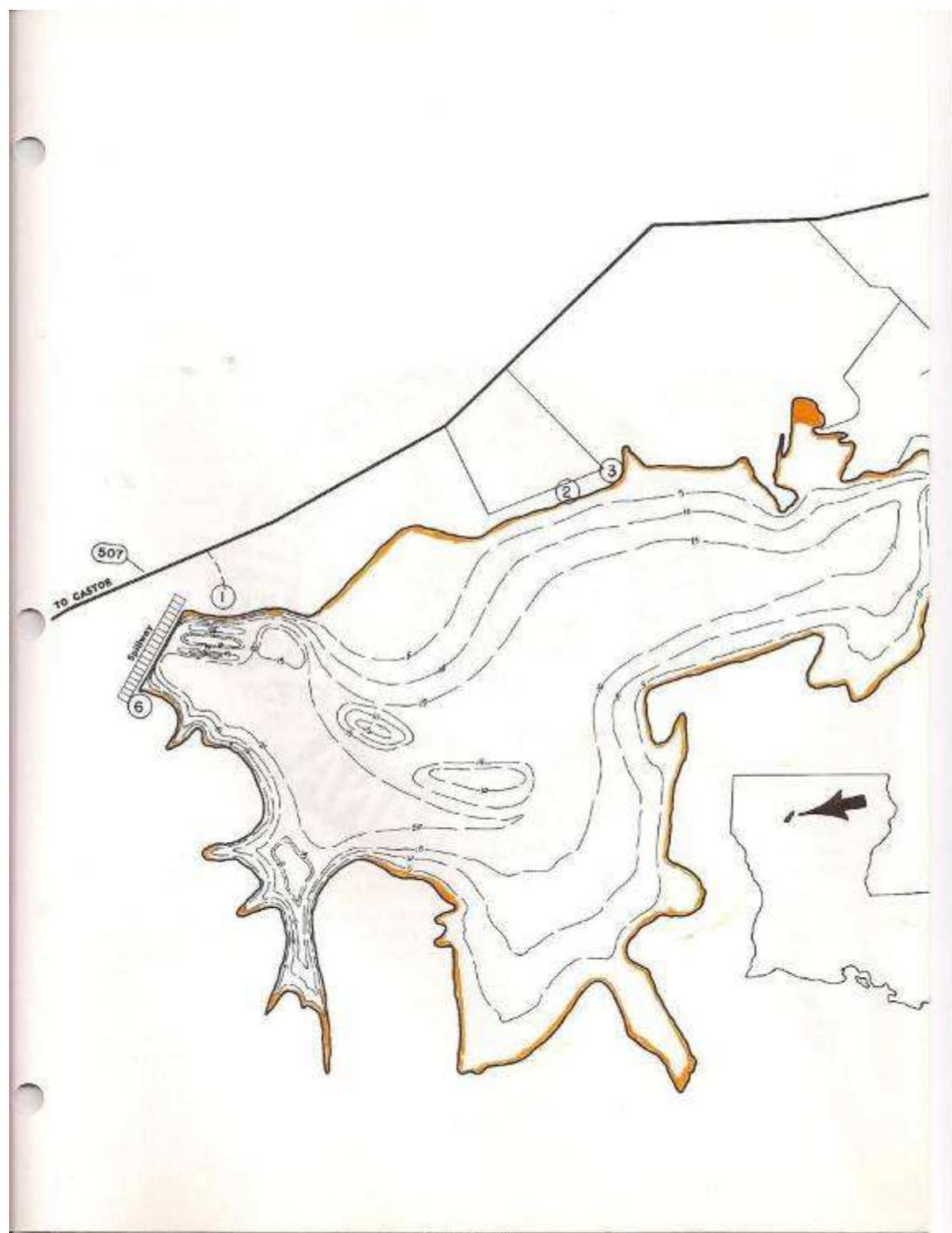
At the time of assessment Kepler Lake was at pool stage. The water color was clear in most areas. There was some turbidity in the area of the dam. In most areas the Secchi disc reading was 35 inches. The lake had a fair plankton bloom.

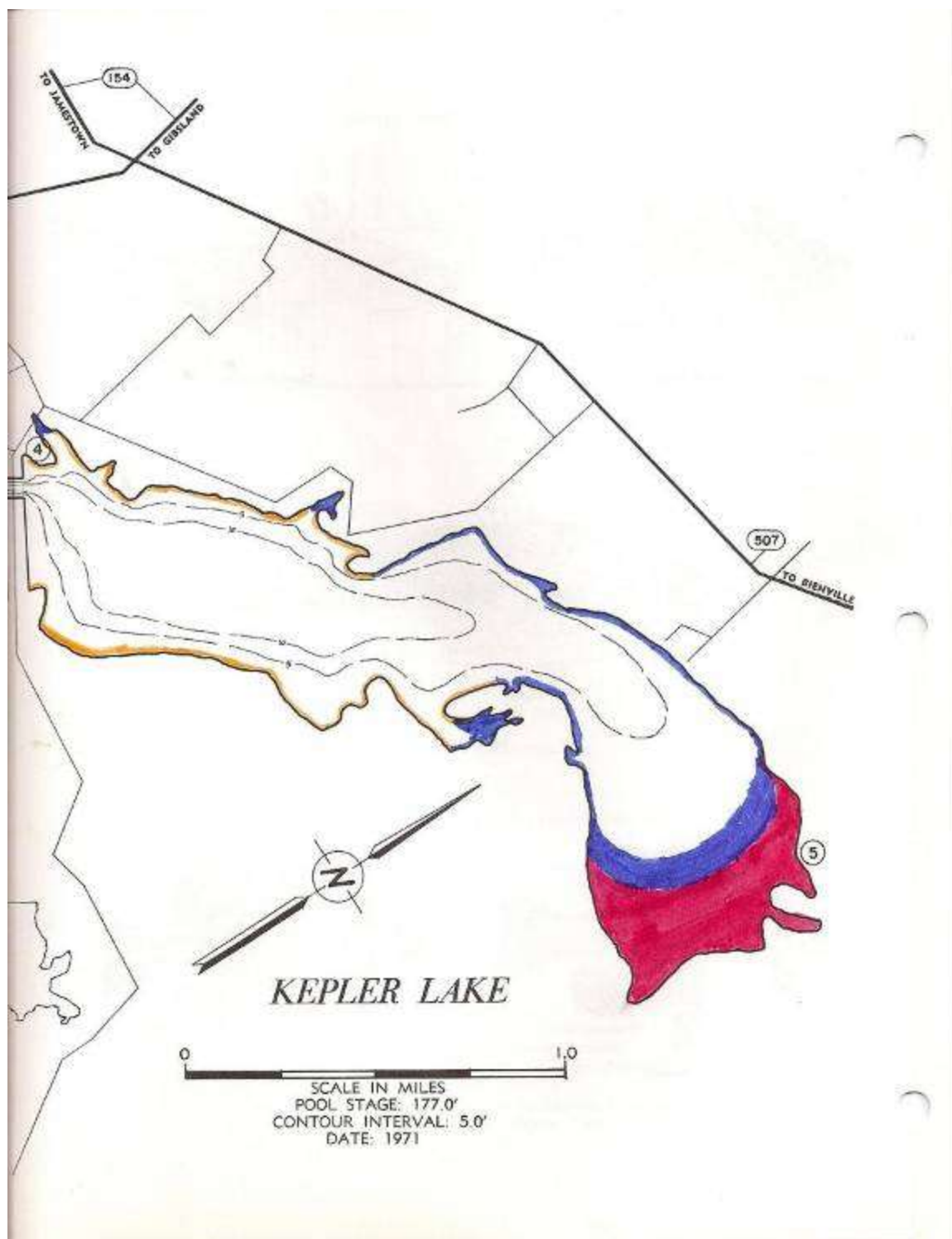
The aquatic plants noted were fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*), bladderwort (*Utricularia spp.*), milfoil (*Myriophyllum spp.*), pondweed (*Potamogeton spp.*), naiad (*Najas spp.*), and muskgrass (*Chara spp.*).

Most infestations were light in all areas of the lake, except the extreme upper end which was moderately infested.

Submersed aquatic plants have shown some increase especially the upper end of the lake.

Above text transcribed from handwritten notes presumably written by Melvin Bagwell and corrected by James Seales, January 2012.





Kepler Lake – Aquatic Vegetation Type Map and Narrative– 1993

Kepler Lake 1993

Kepler Lake was surveyed and assessed for aquatic plants in August, 1993.

At the time of the assessment Kepler Lake was at pool stage. The water color was very clear with no turbidity. The Secchi disc reading was 48 inches and the pH was 6.8.

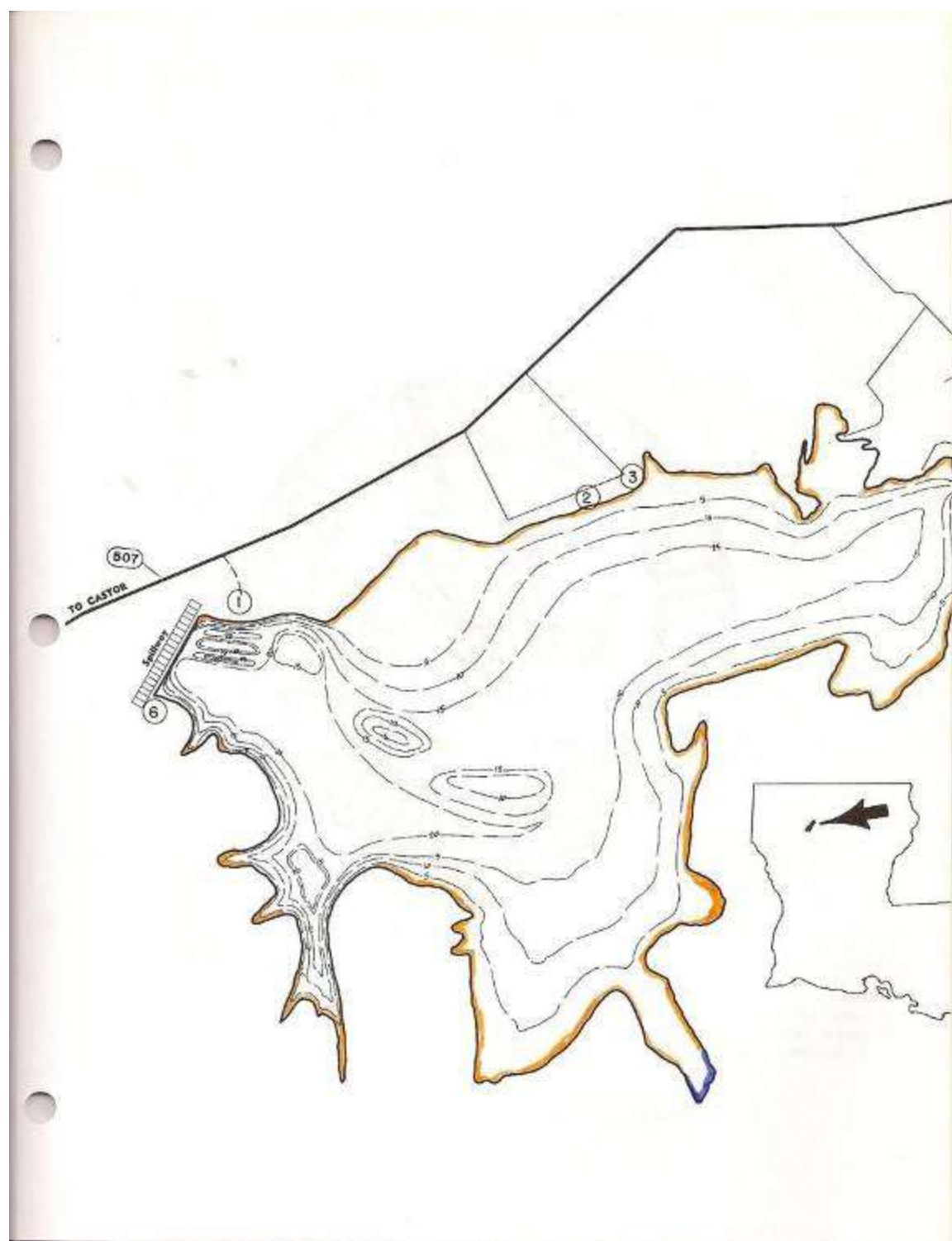
The primary aquatic plant noted was fanwort (*Cabomba caroliniana*). Infestations ranged from severe in the upper end to light in other areas. Infestations were out to 7 feet deep in some areas.

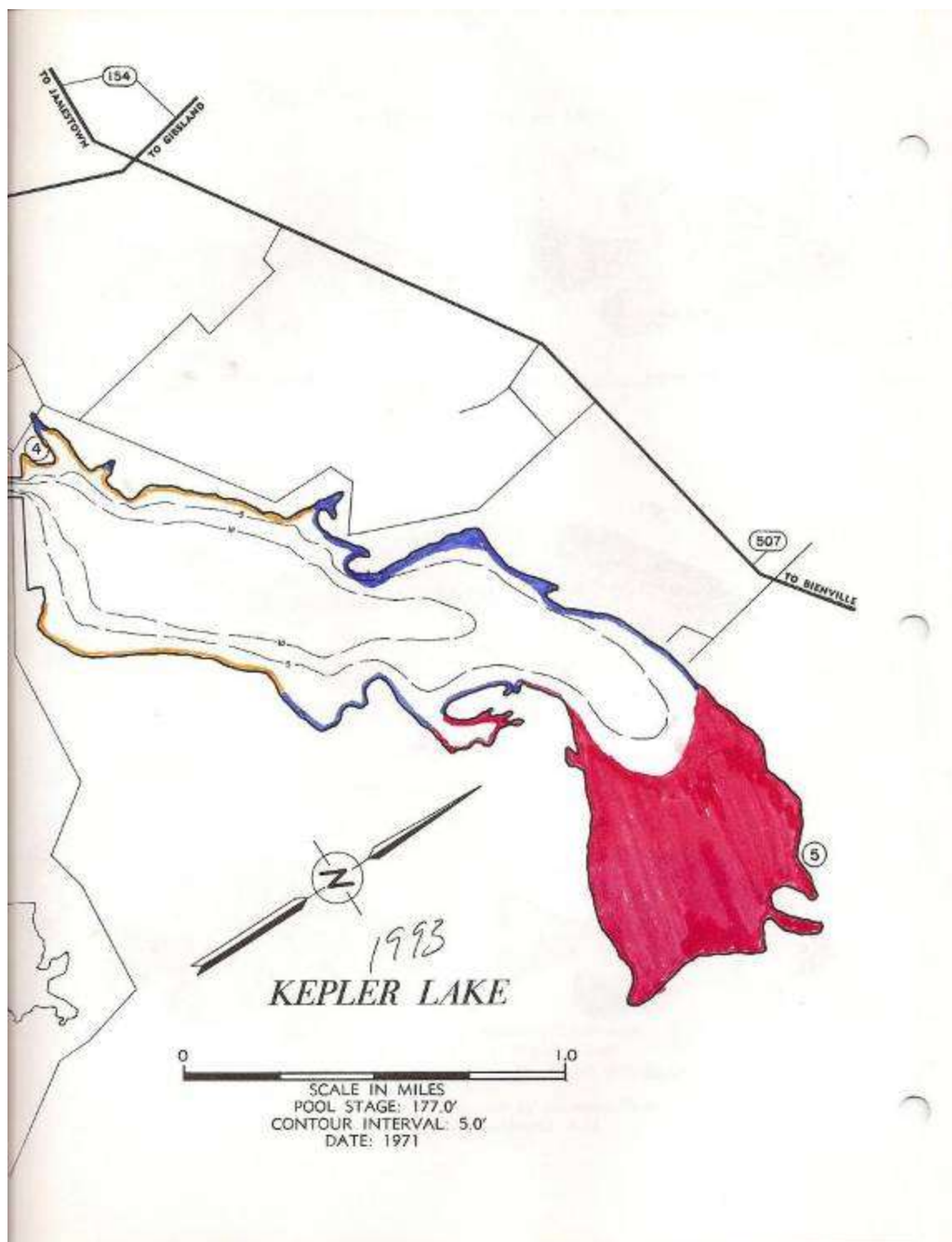
The secondary plants were coontail (*Ceratophyllum demersum*), bladderwort (*Utricularia* spp.), and milfoil (*Myriophyllum* spp.). Most infestations were light or mixed with fanwort (*Cabomba caroliniana*). Brazilian elodea (*Egeria densa*) was established at the boat ramp at the dam. Brazilian elodea (*Egeria densa*) infestations were light.

American lotus (*Nelumbo lutea*) was noted at three locations in the area around Austin's camp. The coverage of American lotus (*Nelumbo lutea*) totaled approximately three acres.

Water shield (*Brasenia schreberi*) was noted at a launch in the mid portion of the lake.

Above text transcribed from handwritten notes presumably written by Melvin Bagwell and corrected by James Seales, February 2012.





Kepler Lake – Aquatic Vegetation Type Map and Narrative – 1994

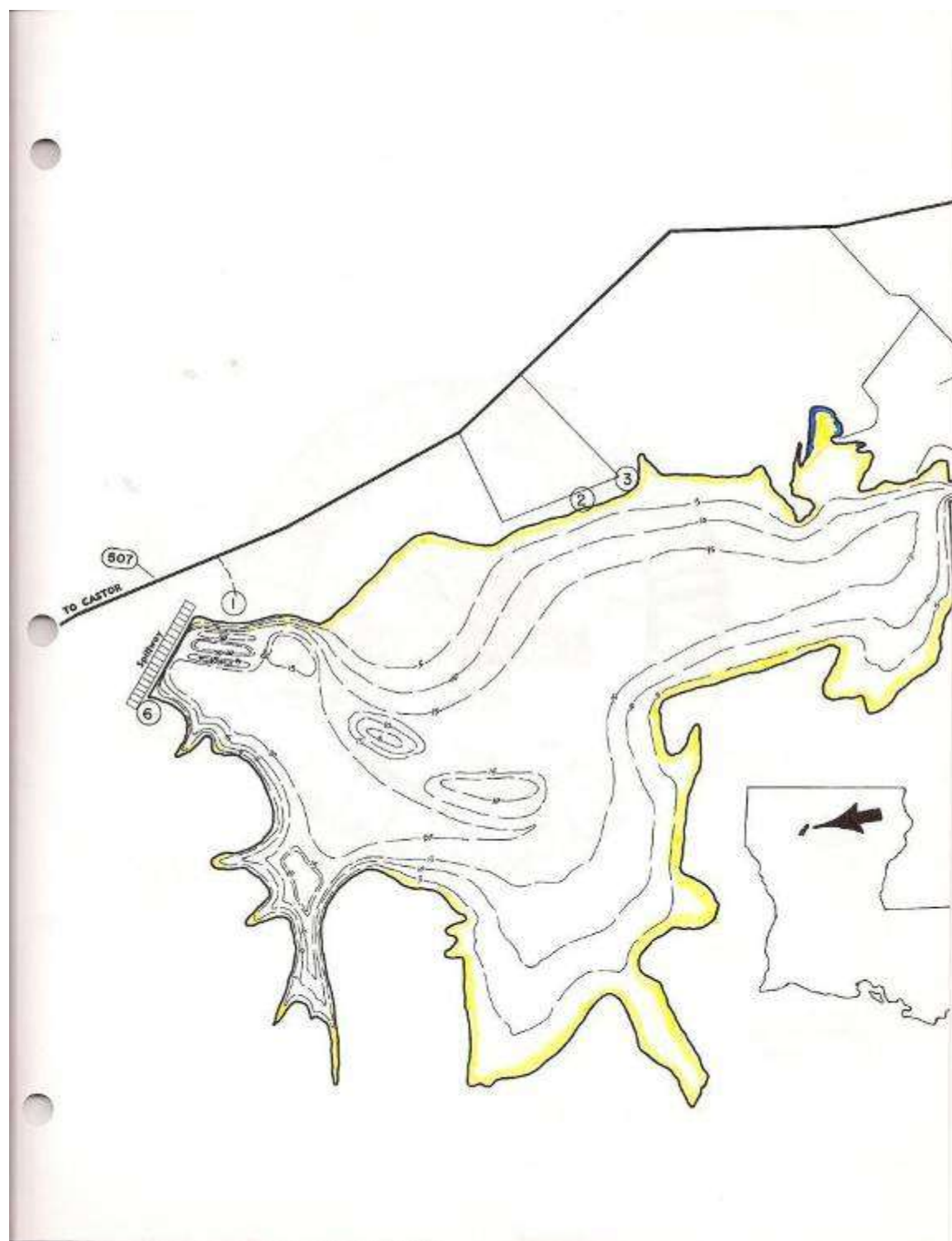
Kepler Lake 1994

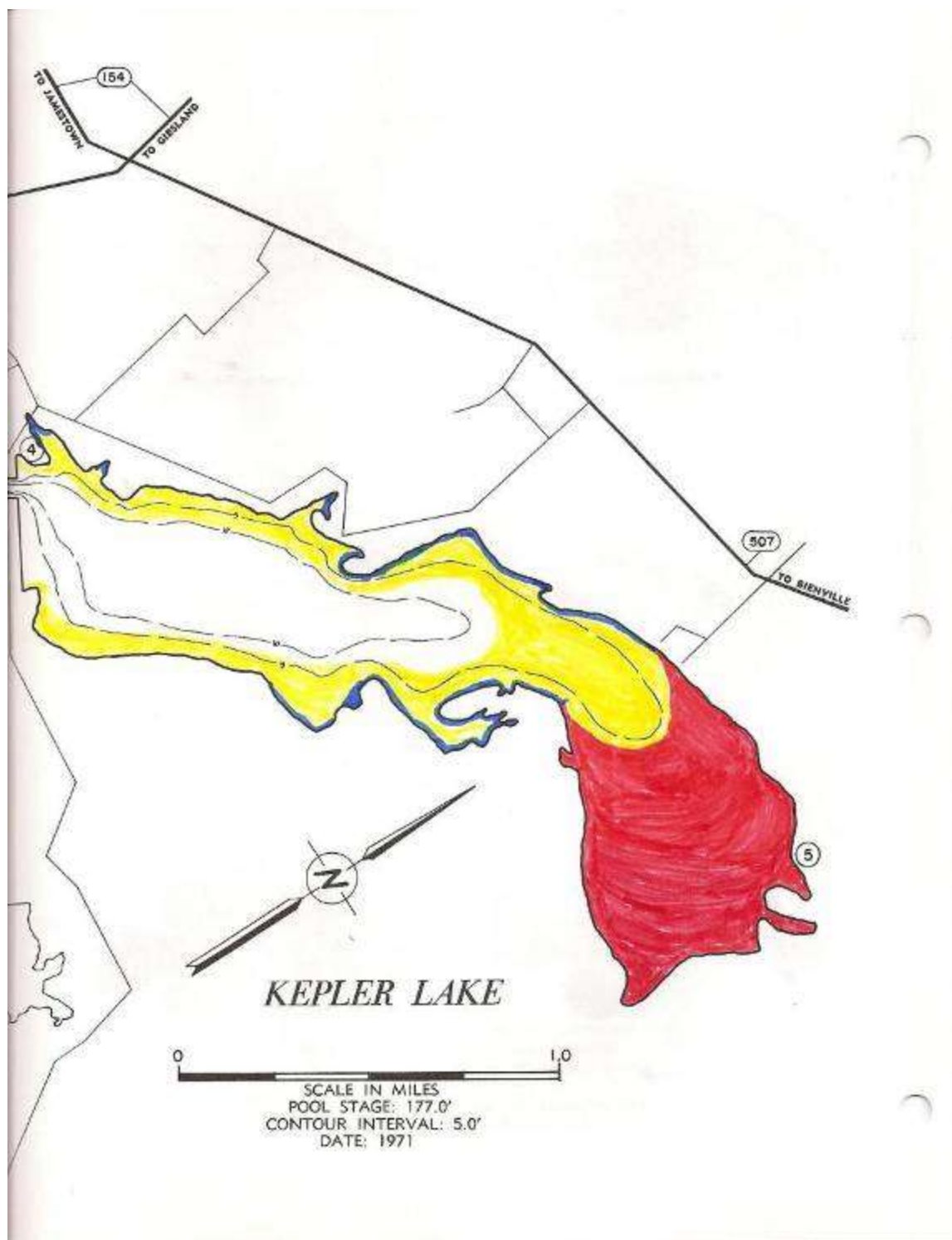
At the time of the assessment Kepler Lake was at pool stage. The water color was extremely clear. The water had some brown stains. The pH was 7.4. The Secchi disc reading at the dam was 56 inches and the reading in the upper end was 49 inches.

The submersed aquatic plants noted were fanwort (*Cabomba caroliniana*), bladderwort (*Utricularia spp.*), milfoil (*Myriophyllum spp.*), coontail (*Ceratophyllum demersum*), southern naiad (*Najas guadalupensis*), Brazilian elodea (*Egeria densa*), muskgrass (*Chara spp.*), pondweed (*Potamogeton spp.*), and filamentous algae.

The submersed aquatic plants in Kepler Lake ranged from light infestations in the lower end to moderate and severe in the upper end. There had been some increase in area and water depth into which the plants have spread. The plants were breaking at 6 feet.

Above text transcribed from handwritten notes presumably written by Melvin Bagwell and corrected by James Seales, February 2012.





Kepler Lake – Aquatic Vegetation Type Map and Narrative – 1995

Kepler Lake 1995

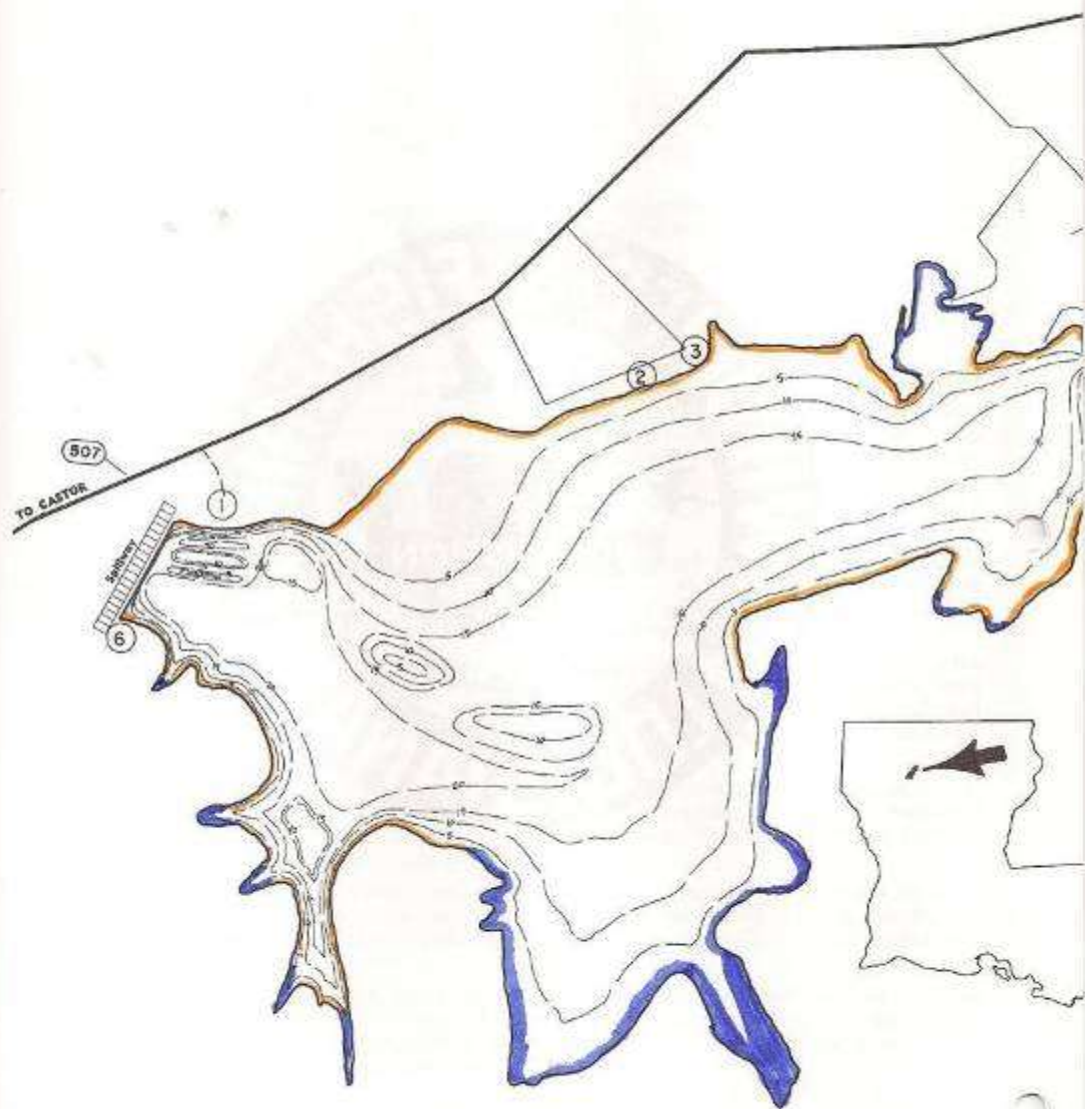
At the time of the assessment Kepler Lake was at pool stage. The water was clear with no turbidity. The Secchi disc reading was 40 inches.

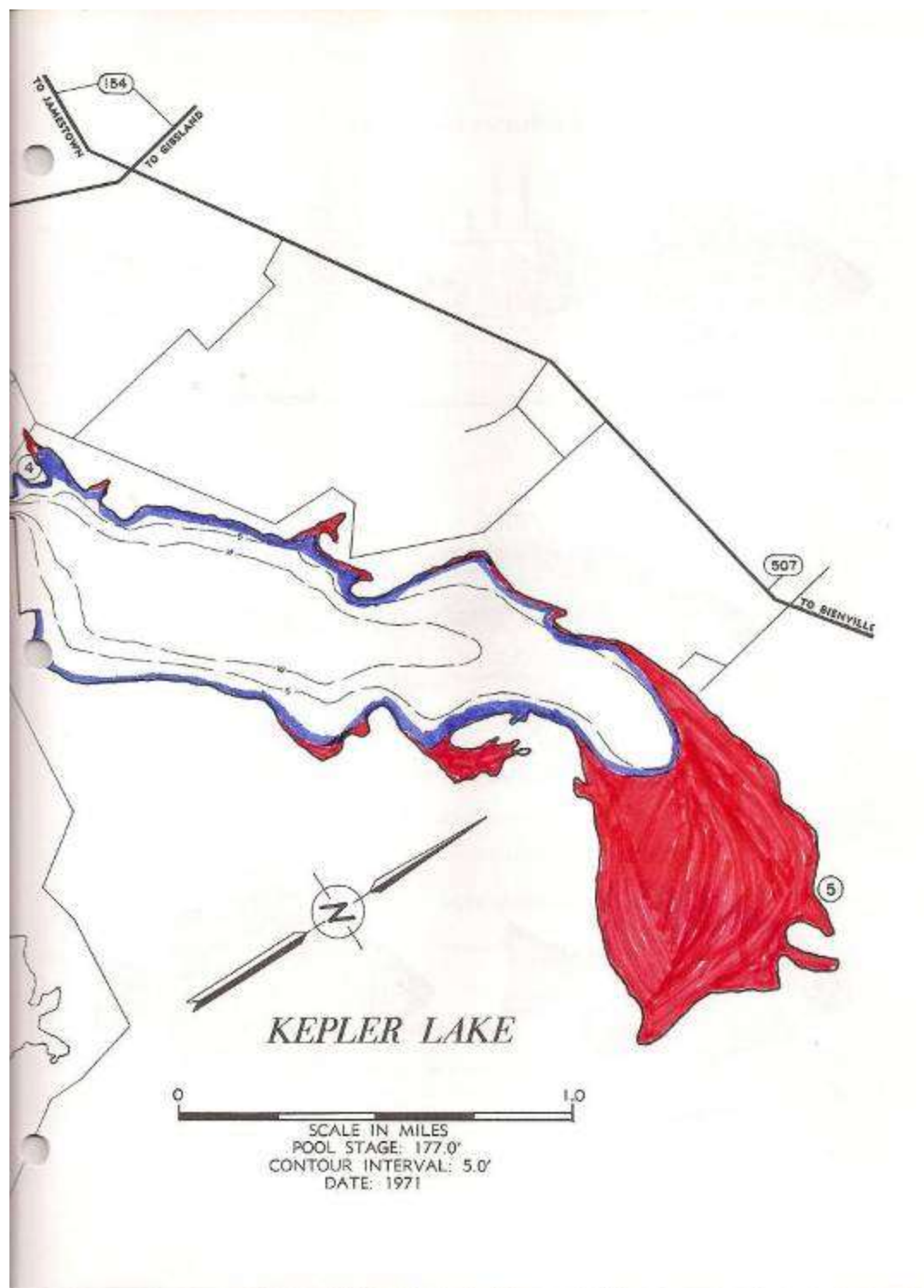
The submersed aquatic plants noted were fanwort (*Cabomba caroliniana*), bladderwort (*Utricularia spp.*), coontail (*Ceratophyllum demersum*), pondweed (*Potamogeton spp.*), Brazilian elodea (*Egeria densa*), and milfoil (*Myriophyllum spp.*).

The infestations of submersed plants ranged from light to moderate in most areas. There is a severe infestation in the extreme upper end.

The emersed plants noted were smartweed (*Polygonum spp.*), American lotus (*Nelumbo lutea*), water primrose (*Ludwigia octovalvis*), arrowhead (*Sagittaria spp.*), lizard's tail (*Saururus cernuus*) and pickerel weed (*Pontederia cordata*).

Above text transcribed from handwritten notes presumably written by Melvin Bagwell and corrected by James Seales, February 2012.





Kepler Lake – Aquatic Vegetation Type Map and Narrative – 1998

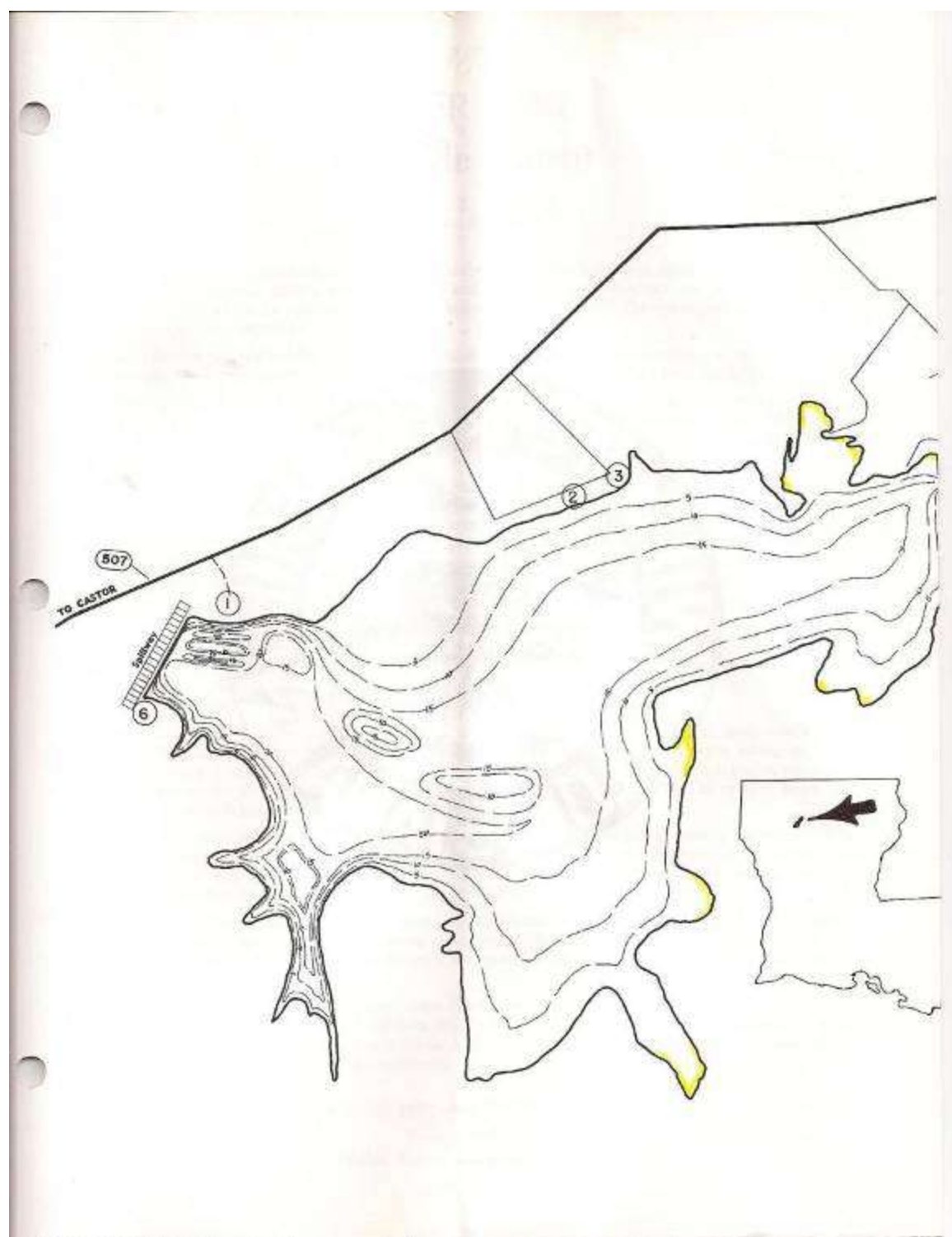
KEPLER LAKE 1998

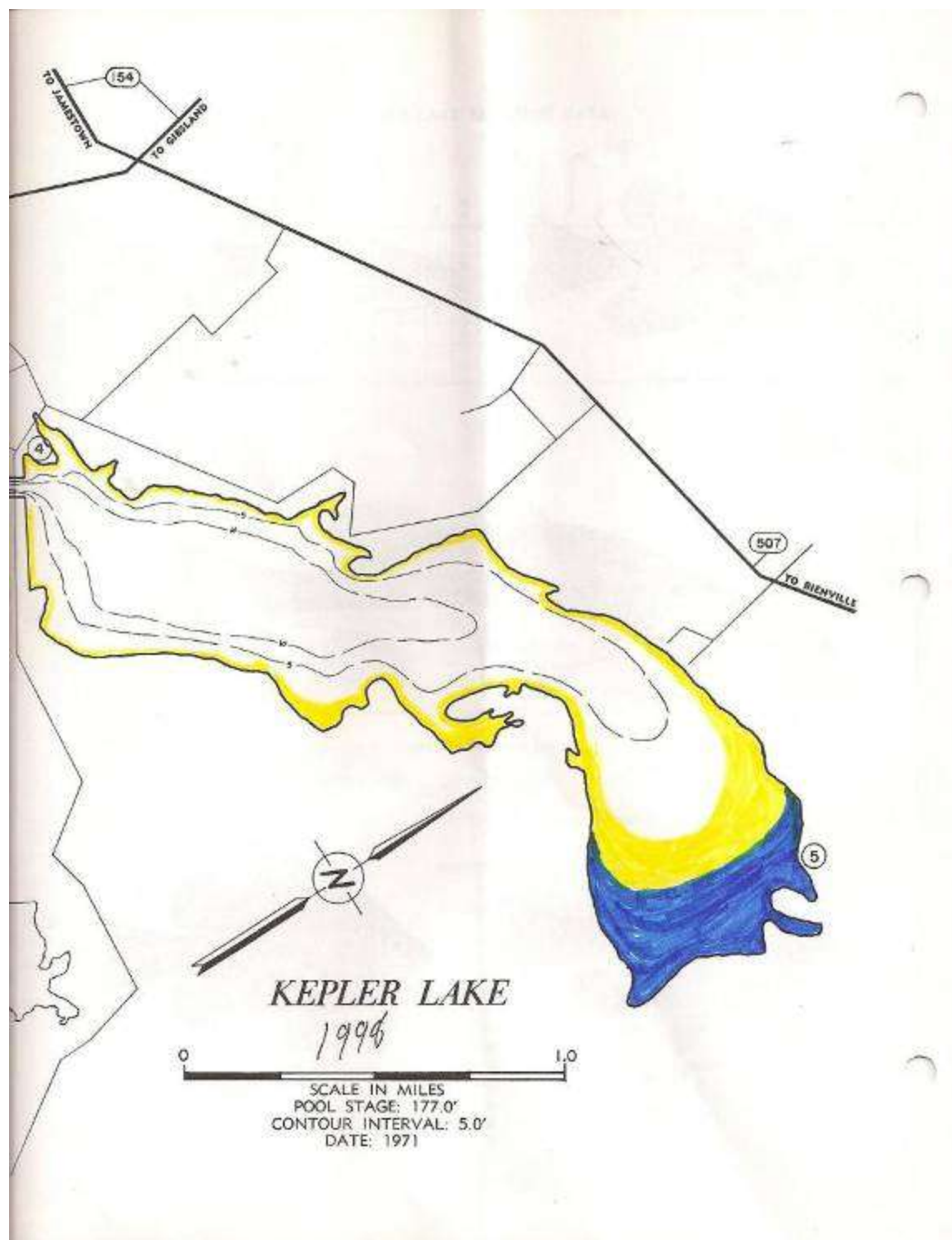
Melvin Bagwell

At the time of the assessment, Kepler Lake was at pool stage. The water color was extremely clear. The aquatic plants surveyed were fanwort (*Cabomba caroliniana*), milfoil (*Myriophyllum spp.*), muskgrass (*Chara spp.*), filamentous algae, spikerush (*Eleocharis spp.*), and coontail (*Ceratophyllum demersum*). The floating and emersed plants noted were American lotus (*Nelumbo lutea*), bulrush (*Scirpus spp.*), fragrant water lily (*Nymphaea odorata*), Water shield (*Brasenia schreberi*), water hyssop (*Bacopa spp.*), water primrose (*Ludwigia octovalvis*), lizard's tail (*Saururus cernuus*), and pickerel weed (*Pontederia cordata*).

The distribution of aquatic plants in Kepler Lake was moderate in the extreme upper end to very light in all other areas. The total infestation was an estimated 10%.

Above text transcribed from original document and corrected by James Seales, January 2012.





Kepler Lake – Aquatic Vegetation Type Map and Narrative – 1999

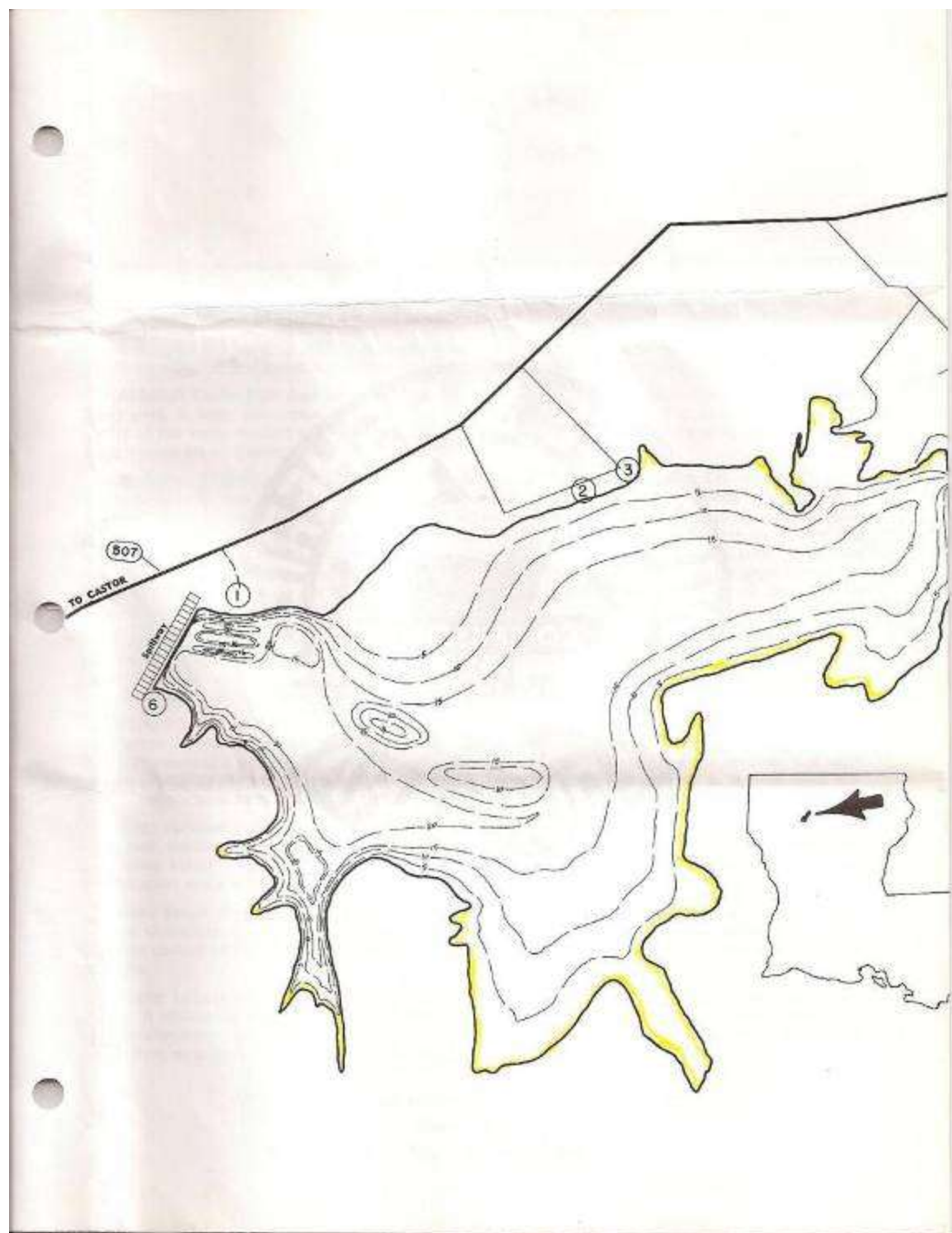
Kepler Lake 1999 Melvin
Bagwell

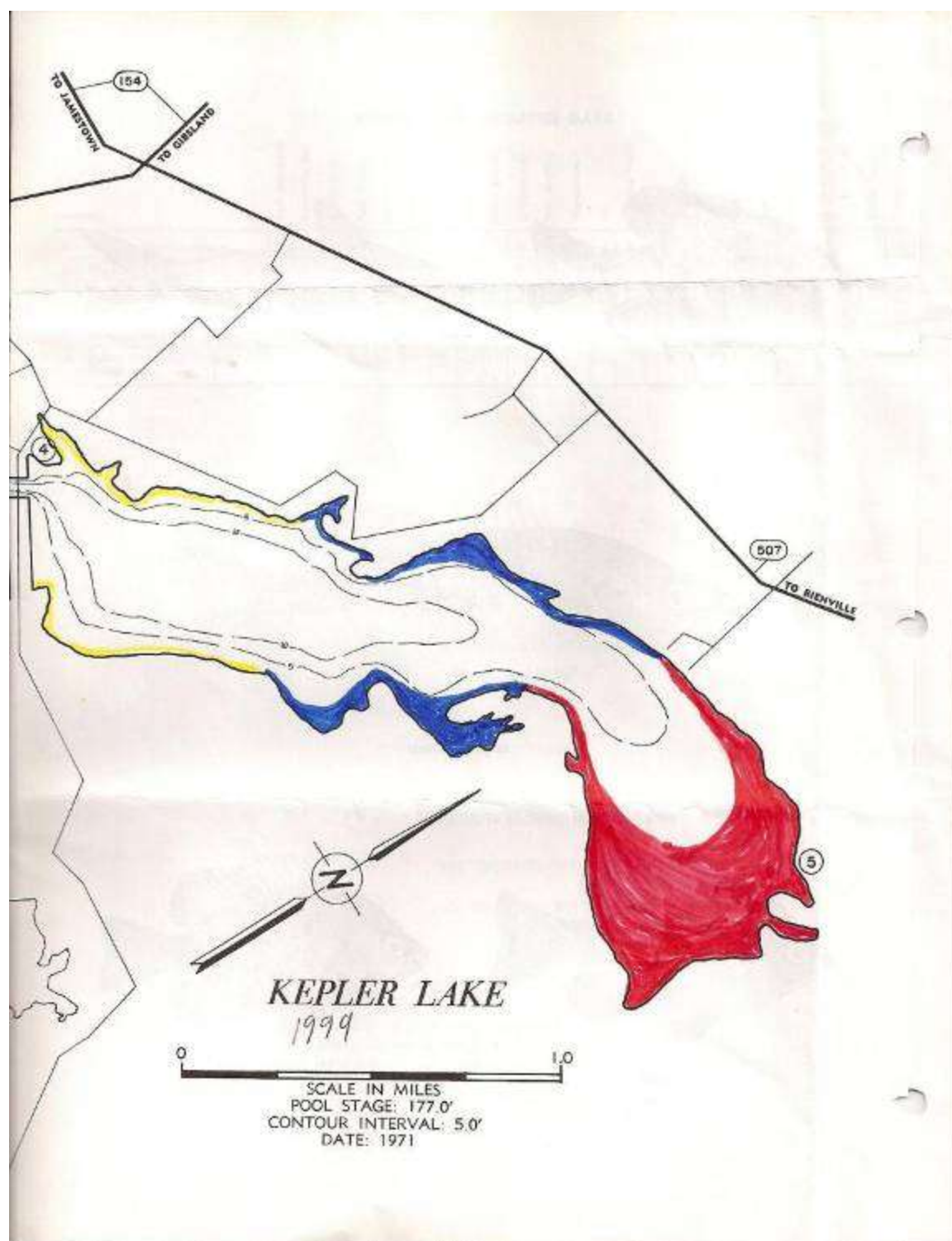
At the time of the assessment, Kepler Lake was at pool stage. The water color was clear.

The submersed aquatic plants noted were southern naiad (*Najas guadalupensis*), fanwort (*Cabomba caroliniana*), milfoil (*Myriophyllum spp.*), coontail (*Ceratophyllum demersum*), and bladderwort (*Utricularia spp.*). The emersed aquatic plants noted were smartweed (*Polygonum spp.*), water hyssop, (*Bacopa spp.*), cattail (*Typha spp.*), water primrose (*Ludwigia octovalvis*), and American lotus (*Nelumbo lutea*).

The infestations of submersed aquatic plants were light in all areas except the extreme upper end which was moderate to severe. The emersed aquatic plants were marginal and light in infestation.

Above text transcribed from original document and corrected by James Seales, January 2012.





Kepler Lake – Aquatic Vegetation Type Map and Narrative – 2000

Kepler Lake August 2000
Melvin Bagwell

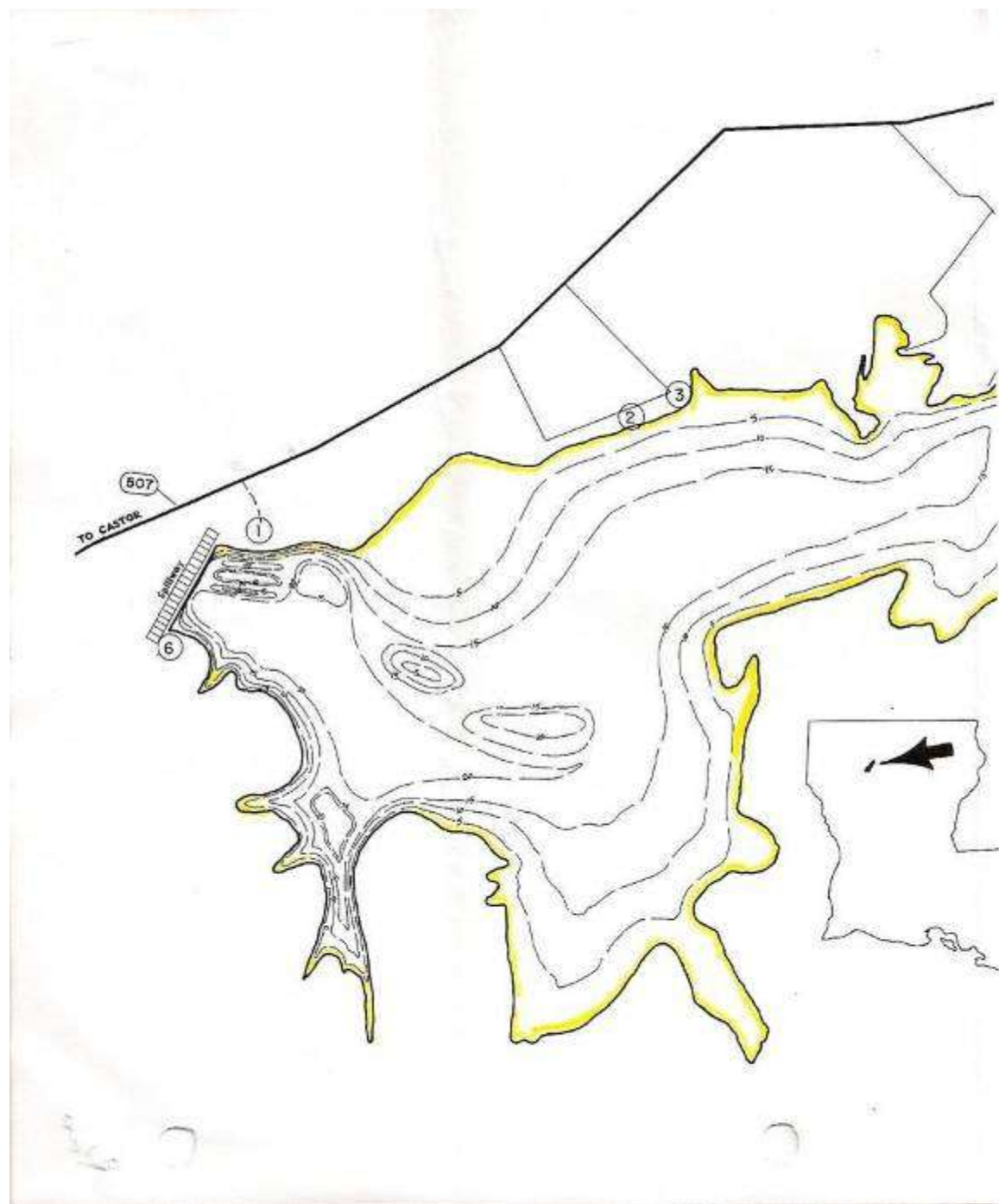
At the time of the assessment Kepler Lake was at pool stage. The water color was clear.

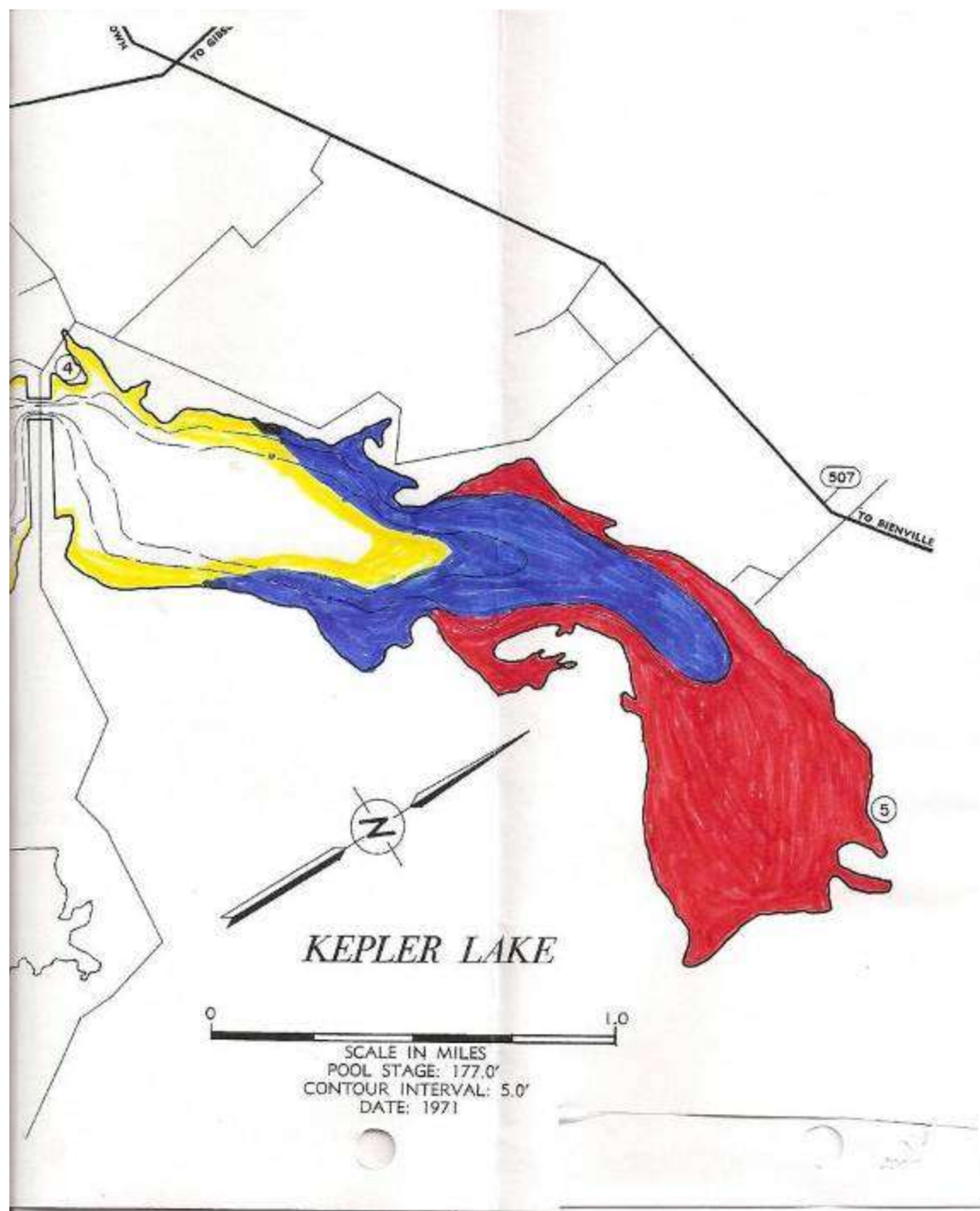
The submersed aquatic plants noted were fanwort (*Cabomba caroliniana*), milfoil (*Myriophyllum spp.*), bladderwort (*Utricularia spp.*), coontail (*Ceratophyllum demersum*), muskgrass (*Chara spp.*), southern naiad (*Najas guadalupensis*), pondweed (*Potamogeton spp.*), and filamentous algae.

The emersed aquatic plants noted were American lotus (*Nelumbo lutea*), fragrant water lily (*Nymphaea odorata*), water pennywort (*Hydrocotyle umbellata*) water primrose (*Ludwigia octovalvis*) and water shield (*Brasenia schreberi*).

The estimated percentage of infestation was 10 percent.

Above text corrected by James Seales, February 2012.





Kepler Lake – Aquatic Vegetation Type Map and Narrative – 2001

KEPLER LAKE

July 2001

Melvin Bagwell

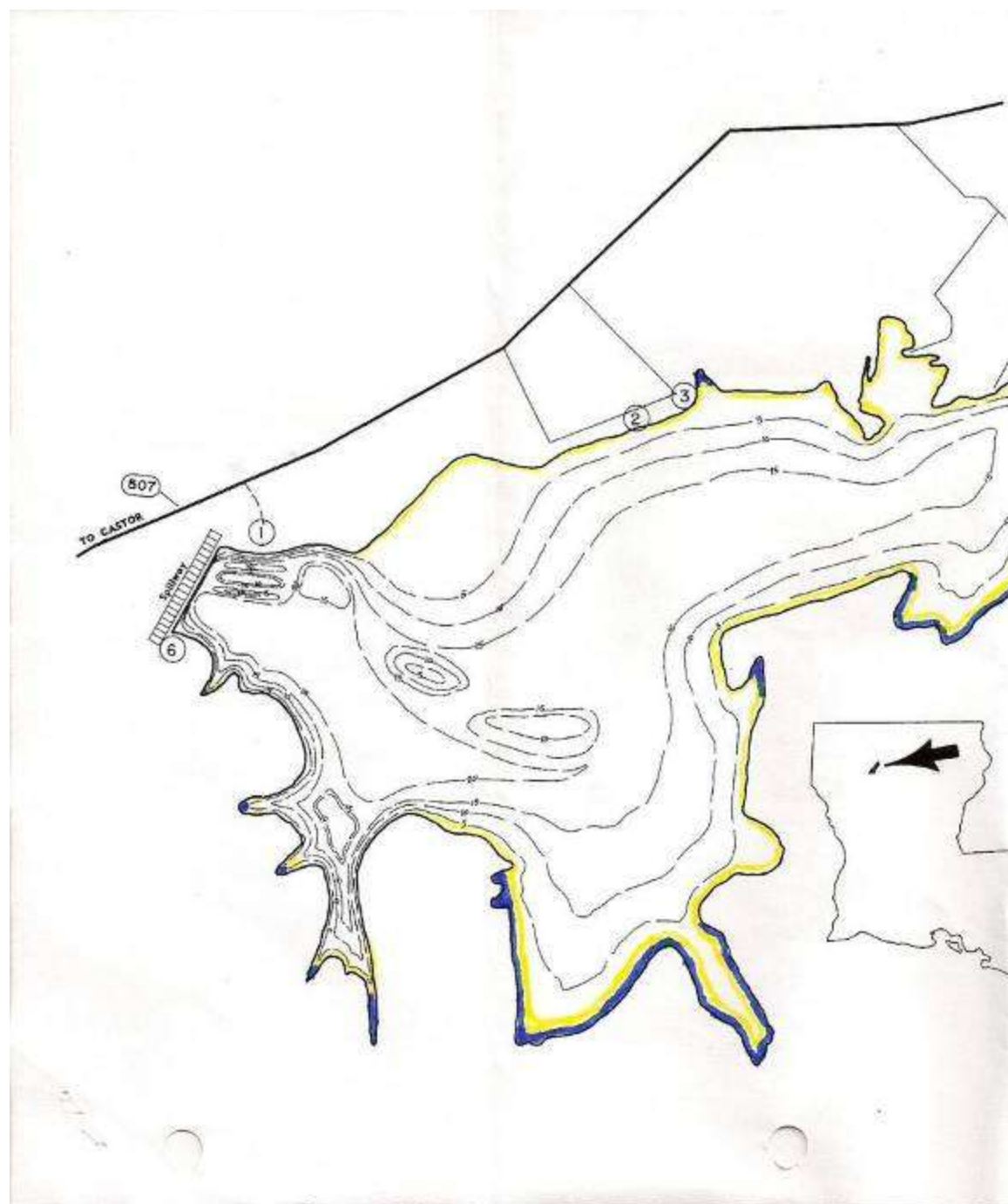
Kepler Lake was surveyed for the presence of aquatic vegetation on July 24, 2001. At the time of the survey the lake was at pool stage. The water color was clear.

The submersed plants noted were: fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*), bladderwort (*Utricularia spp.*), milfoil (*Myriophyllum spp.*), spikerush (*Eleocharis spp.*), muskgrass (*Chara spp.*) and filamentous algae.

The emersed plants noted were: American lotus (*Nelumbo lutea*), fragrant water lily (*Nymphaea odorata*), waterhyssop (*Bacopa spp.*), bulrush (*Scirpus spp.*), and watershield (*Brasenia schreberi*).

The estimated percent coverage of submersed plants was 25%.

Above text corrected by James Seales, February 2012.



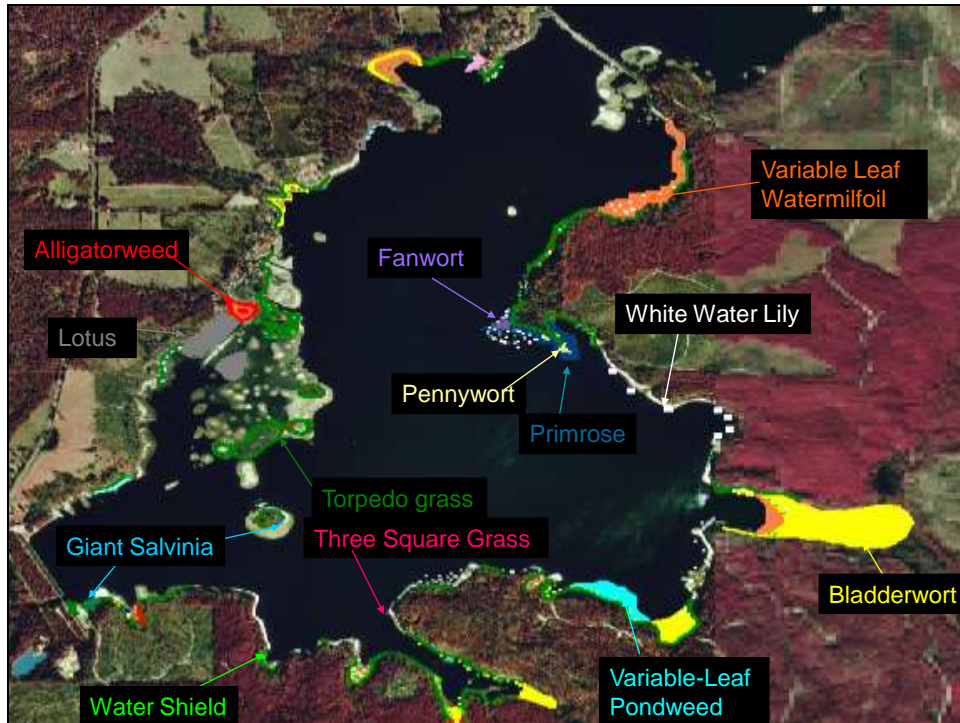


Kepler Lake – Aquatic Vegetation Type Map and Narrative – 2009

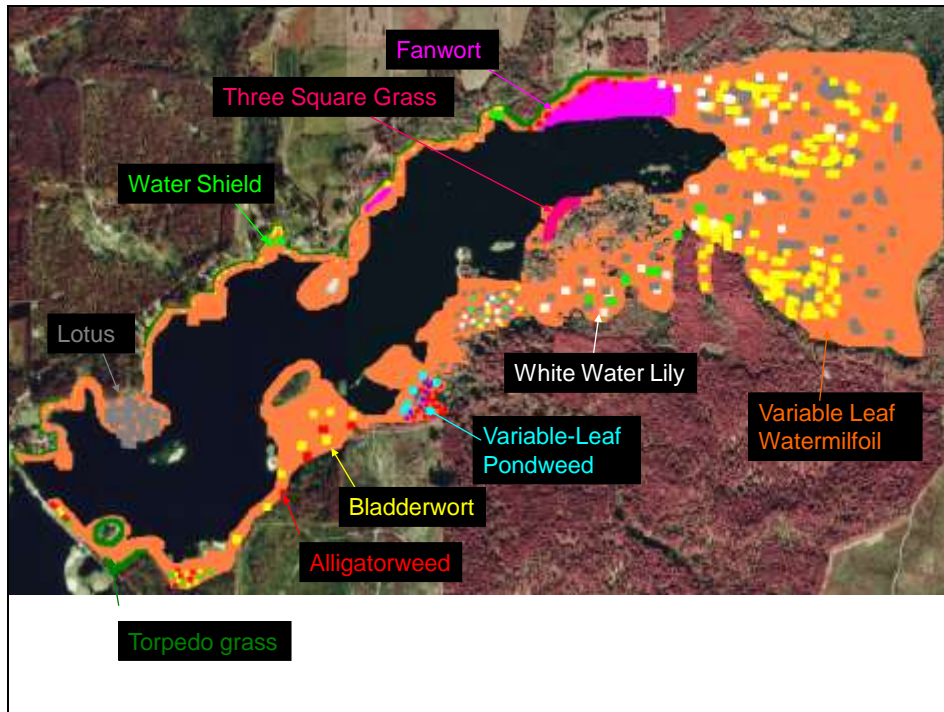
A vegetation type map survey was performed in May of 2009. Coverage of submerged aquatic vegetation was approximately 500 acres, and emergent vegetation covered approximately 50 acres. The submerged vegetation consisted of 90% milfoil (*Myriophyllum* spp.), 5% fanwort (*Cabomba caroliniana*), 3% American lotus (*Nelumbo lutea*), and 2% mixture of other species.

Above text assimilated from information in e-mail from John White.

Kepler Lake – Typemap Survey – April 2009 South End



Kepler Lake – Typemap Survey – April 2009
North End

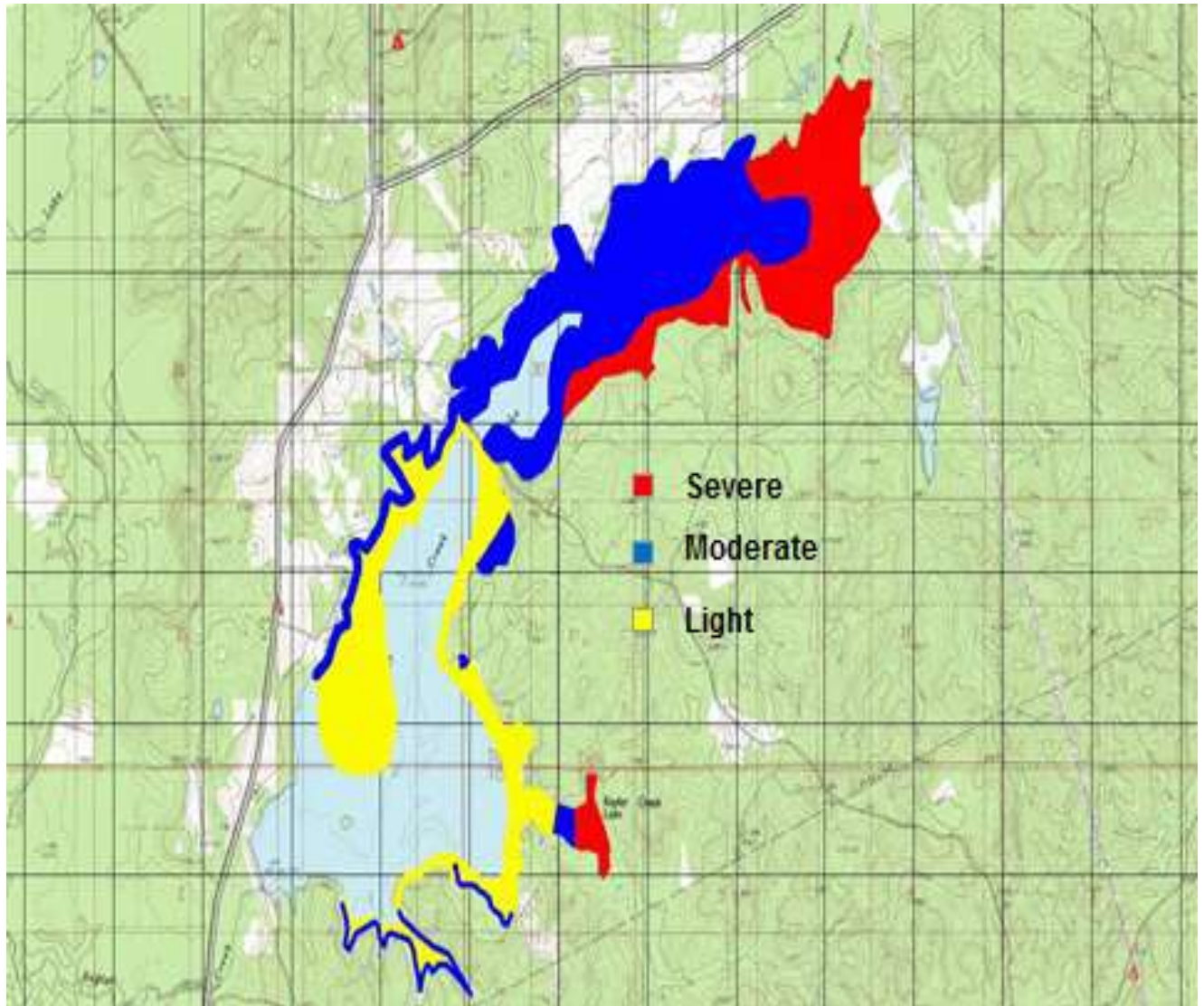


KEPLER LAKE
Vegetation Type Map
June 12, 2014

Kepler Lake was surveyed on June 12, 2014 by Jeff Sibley and Kevin Houston. The lake was a few inches over pool stage, and the water was clear. The survey was conducted just prior to the scheduled drawdown date of June 15, 2014.

North of the Parish Road 676 bridge-- A band of emergent watershield (*Brasenia schreberi*) and waterlily (*Nymphaea odorata*) was present in a 30-50 foot wide swath along the bankline. Beyond the band of vegetation, the lake was very open; however, below the surface, submerged aquatic vegetation (SAV) was concentrated in the water column to within 2 feet of the surface. These concentrations of SAV were found growing out to the eight foot contour line. The SAV noted in this portion of the lake was variable leaf milfoil (*Myriophyllum heterophyllum*), eurasion milfoil (*Myriophyllum spicatum*), fanwort (*Cobomba caroliniana*), and bladderwort (*Utricularia* spp.). Milfoil comprised 70% of the total, and the other species listed filled in the remaining 30%. The northernmost portion of the lake (approx. 200 acres) was covered by a dense mat of emergent and submerged vegetation. A few primary stage plants of giant salvinia were present near JJ's ramp adjacent to Parish Road 676. Total acreages of severe and moderate coverage were 380 acres and 340 acres respectively.

South of the Parish Road 676 Bridge-- A band of watershield (*Brasenia schreberi*), American lotus (*Nelumbo lutea*), watergrass (*Luziola fluitans*), and waterlily (*Nymphaea odorata*) was present along the bank in a 10 – 20 ft. swath. Once again, submerged vegetation was present out to the eight foot contour line; however, the concentration of SAV below the bridge was less dense than above the bridge. This decline in SAV density is likely due to increased wave action. The SAV noted south of the bridge included bladderwort (*Utricularia* spp.), fanwort (*Cobomba caroliniana*), hydrilla (*Hydrilla verticillata*), elodea (*Elodea Canadensis*), southern naiad (*Najas guadalupensis*), and eurasion milfoil (*Myriophyllum spicatum*). A few ramets of giant salvinia (*Salvinia molesta*) were scattered on the southern portion of the lake. Total acreages of severe, moderate, and light coverage were 22, 35, and 420 acres respectively.



Kepler Lake Aquatic Vegetation Typemap for 2014

Kepler Creek Reservoir
Aquatic Vegetation Typemap Survey
August 18, 2015

Introduction

An aquatic vegetation typemap survey was performed on Kepler Creek Reservoir in Bienville Parish on August 18, 2015. The survey was conducted by Inland Fisheries Biologist James Seales. The lake was approximately three inches below pool stage at the time of the survey. The water color was stained.

Vegetation Observed

Marginal Vegetation

Marginal aquatic vegetation was observed along significant areas of the shoreline of the lake. The predominate species was torpedo grass (*Panicum repens*) which covered large areas of the shoreline. Clumps of wild taro (*Colocasia esculenta*) were widely scattered around the shoreline. Bulrush (*Scirpus* spp.) and fiddleleaf (*Hydrolea* spp.) were also found in a few locations.

Emergent Vegetation

Fragrant water lily (*Nymphaea odorata*) was the prominent species of emergent vegetation found on Kepler Lake. The density of fragrant water lily ranged from widely scattered in some areas to dense coverage in areas of severe infestation. Creeping water primrose (*Ludwigia repens*), alligator weed (*Alternanthera philoxeroides*), pondweed (*Potamogeton* spp.), southern watergrass (*Luziola fluitans*), baby-tears (*Micranthemum umbrosum*) and American lotus (*Nelumbo lutea*) were found in a few locations on the lake. Most of the emergent vegetation was found in the back of the coves and on the upper end of the lake in water less than 3 ft. deep. A few patches of fragrant water lily were found in 5 to 6 ft. of water.

Submersed Vegetation

Submersed aquatic vegetation (SAV) was scattered in the shoreline areas out to 7 ft. deep. Coverage was sparse in most areas at the time of the survey. The major species were widgeon grass (*Ruppia maritima*) and bladderwort (*Utricularia* spp.). Slender spike rush (*Eleocharis baldwini*) was seen along the shoreline. Muskgrass (*Chara* spp.), naiad (*Najas* spp.), fanwort (*Cabomba caroliniana*), and variable-leaf milfoil (*Myriophyllum heterophyllum*) were observed in a couple of locations in the lake. The SAV was not topped out in any location visited and was found to be growing only 1 – 2 ft. or less up off of the lake bed in most areas. Approximately 25% of the lake had a light coverage of this mixture of SAV.

Floating Vegetation

Giant salvinia (*Salvinia molesta*) was found in a couple of areas on the lake as was duckweed (*Lemna* spp.). Neither plant was problematic at the time of the survey, but giant salvinia has the potential to become a major problem on Kepler Lake.

Summary

Kepler Creek Reservoir underwent a drawdown from June 15, 2014 through the end of November 2014. Vegetation coverage was greatly reduced following this drawdown. Currently the only area on the lake where vegetation is problematic is the extreme upper end of the lake. Currently, SAV is present out to the 7 ft. contour, but coverage is sparse in most areas and it is not problematic at this time. Currently coverage of emergent vegetation is approximately 364 acres (18.9%). Light coverage of emergent vegetation is found on approximately 130 acres, moderate coverage on 111 acres and severe coverage is found on 123 acres. Approximately 480 acres (25%) of the lake has light coverage of submersed vegetation.

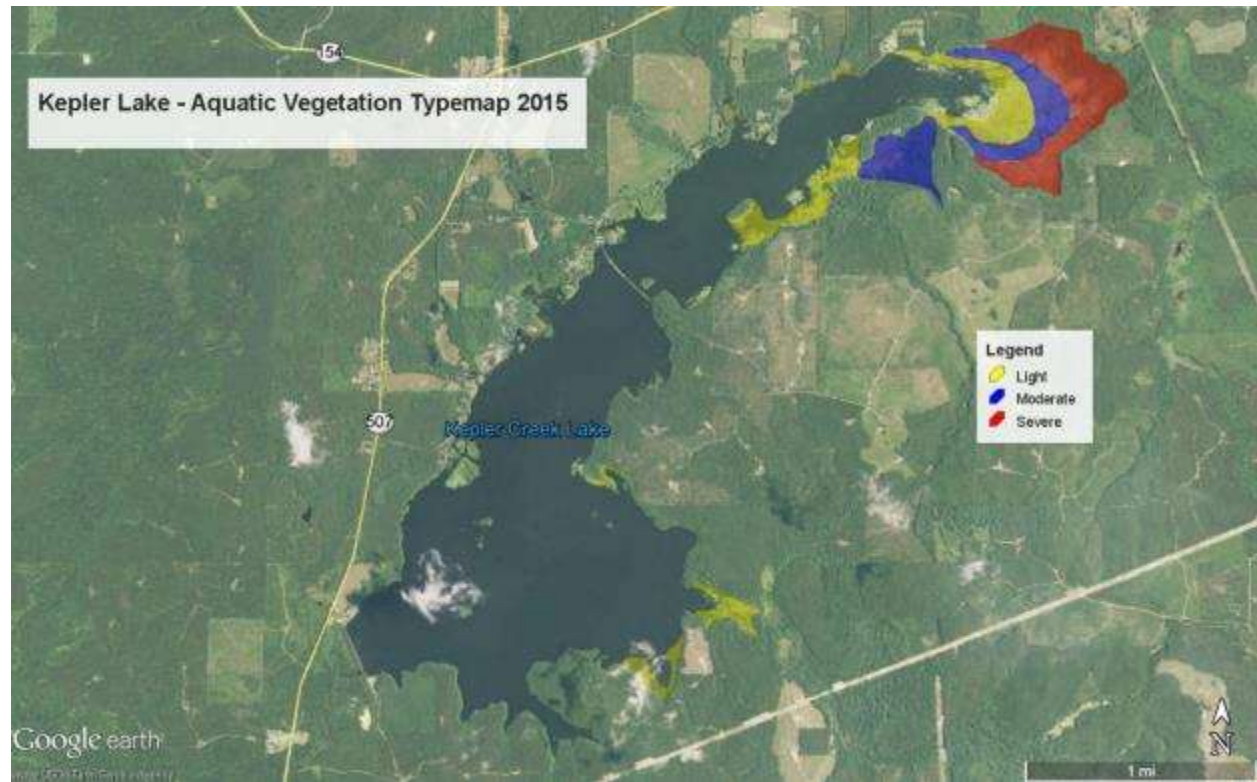
Vegetation Concerns

Giant salvinia (*Salvinia molesta*) was discovered on Kepler Creek Reservoir in 2009. Foliar herbicide applications have been ongoing as needed since the plant was discovered. The lake should be monitored for the presence of giant salvinia and additional herbicide applications made as necessary. Even though vegetation coverage was greatly reduced during the drawdown last year, significant levels of vegetation remain and will likely increase in coverage in future years. Two thousand triploid grass carp were stocked by the Kepler Creek Recreation and Water Conservation District Commission (KCRWCDC) in 2009 and an additional 1,500 by LDWF in 2013. The lake should be monitored to determine if additional grass carp are needed to control the submerged aquatic vegetation that has historically been problematic in Kepler Lake.

SPECIES LIST

KEPLER CREEK RESERVOIR 2015

<u>Common Name</u>	<u>Scientific Name</u>
Alligator weed	<i>Alternanthera philoxeroides</i>
American lotus	<i>Nelumbo lutea</i>
Baby-tears	<i>Micranthemum umbrosum</i>
Bladderwort	<i>Utricularia</i> spp.
Bulrush	<i>Scirpus</i> spp.
Creeping Water Primrose	<i>Ludwigia repens</i>
Duckweed	<i>Lemna</i> spp.
Fanwort	<i>Cabomba caroliniana</i>
Fiddleleaf	<i>Hydrolea</i> spp.
Fragrant Water Lilly	<i>Nymphaea odorata</i>
Giant salvinia	<i>Salvinia molesta</i>
Muskgrass	<i>Chara</i> spp.
Naiad	<i>Najas</i> spp.
Pondweed	<i>Potamogeton</i> spp.
Slender Spike Rush	<i>Eleocharis baldwinii</i>
Southern watergrass	<i>Luziola fluitans</i>
Torpedo Grass	<i>Panicum repens</i>
Variable-leaf milfoil	<i>Myriophyllum heterophyllum</i>
Widgeon grass	<i>Ruppia maritima</i>
Wild Taro	<i>Colocasia esculenta</i>



Kepler Creek Reservoir
Aquatic Vegetation Assessment
September 13, 2016

LDWF biologist, James Seales, conducted an aquatic vegetation assessment on Kepler Creek Reservoir on September 13, 2016. The water level was approximately 1 inch above the spillway crest at the time of the survey and the water color was stained.

Total coverage of aquatic vegetation on Kepler Lake was approximately 350 acres or 18%. Emergent and marginal vegetation covered approximately 135 acres of Kepler Lake, and was most prevalent in the water less than 3 feet deep in the back of coves and on the upper portion of the lake. Torpedo grass was the most common species. Giant salvinia was the only invasive plant found on the lake and was impacting roughly 40 acres. All stages of the plant were observed interspersed with emergent and marginal vegetation.

The area below the Piney Woods Rd. Bridge (Bienville Parish Rd. 676) contained very little submerged vegetation, only the extreme back ends of the coves contained any significant amount of submerged vegetation. Variable-leaf milfoil, bladderwort, and fanwort were observed in these areas. The remainder of the main lake area only had very sparse coverage of submerged vegetation including muskgrass, naiad and widgeon grass. Submerged vegetation was only found in 1 to 2 feet of water. The following marginal aquatic vegetation species were observed along portions of the shoreline below the bridge: torpedo grass, wild taro, bulrush, fiddleleaf, fragrant water lily, and American lotus. Giant salvinia was mixed in with the torpedo grass along some of the shoreline areas.

The area of the lake above the bridge contained light to moderate coverage of submerged vegetation out to depths of 6 feet. Approximately 35% of the area above the bridge contained some form of aquatic vegetation. Submerged species present were variable-leaf milfoil, bladderwort and fanwort. The primary emergent plant found in this area was fragrant water lily which covered significant amounts of the upper end of Kepler Lake. Creeping water primrose, alligator-weed, pondweed, torpedo grass, southern watergrass and American lotus were also identified. Giant salvinia was again interspersed with the torpedo grass and emergent vegetation.

Aquatic vegetation coverage on Kepler Lake was reduced approximately 7% from 2015. High water levels and increased turbidity from heavy rains during the March flood event generally limited the growth of submerged and emergent vegetation on most area lakes in 2016. At the present time, it is unclear if any of this reduction in submerged vegetation can be attributed to the introduction of triploid grass carp in 2013. Further monitoring of the situation will be necessary to determine if additional carp are needed.

Kepler Creek Reservoir
Bienville Parish, LA
Vegetation Type Map
August 24 & 25, 2017

An aquatic vegetation typemap survey was performed on Kepler Creek Reservoir (1,925 acres) in Bienville Parish on August 24 & 25, 2017. The survey was conducted by Inland Fisheries Biologist James Seales. The lake was approximately two inches above pool stage at the time of the survey. The water color ranged from moderately stained on the lower end to heavily stained on the upper end. An algae bloom was present throughout the lake.

Species Present

<u>Common Name</u>	<u>Scientific Name</u>
Alligator-weed	<i>Alternanthera philoxeroides</i>
American lotus	<i>Nelumbo lutea</i>
Baby-tears	<i>Micranthemum umbrosum</i>
Bladderwort	<i>Utricularia</i> spp.
Bulrush	<i>Scirpus</i> spp.
Creeping Water Primrose	<i>Ludwigia repens</i>
Fanwort	<i>Cabomba caroliniana</i>
Fiddleleaf	<i>Hydrolea</i> spp.
Filamentous algae	
Fragrant Water Lilly	<i>Nymphaea odorata</i>
Giant salvinia	<i>Salvinia molesta</i>
Hydrilla	<i>Hydrilla verticillata</i>
Muskgrass	<i>Chara</i> spp.
Naiad	<i>Najas</i> spp.
Pondweed	<i>Potamogeton</i> spp.
Slender Spike Rush	<i>Eleocharis baldwinii</i>
Southern watergrass	<i>Luziola fluitans</i>
Torpedo Grass	<i>Panicum repens</i>
Variable-leaf milfoil	<i>Myriophyllum heterophyllum</i>
Water shield	<i>Brasenia schreberi</i>
Widgeon grass	<i>Ruppia maritima</i>
Wild Taro	<i>Colocasia esculenta</i>

Severity

Kepler Lake has approximately 913 acres which have some degree of aquatic vegetation coverage. This equates to 47% of the lake being inhabited by some type of aquatic vegetation. Roughly 446 acres or 23% of this coverage is classified as light coverage. This consists primarily of submerged vegetation which had very light to sparse coverage. The upper end of the lake is heavily covered with aquatic vegetation as are the backs of a couple of coves and some shallow flats along the shoreline. Approximately 373 acres or 19% of Kepler Lake has heavy coverage of aquatic vegetation. This was a mix of emergent, submersed and floating vegetation that made these areas inaccessible to normal boat traffic. Giant salvinia was found in all stages in these areas in coverage

ranging from solid mats, to being interspersed with the other vegetation. The lake had about 5% coverage (94 acres) of aquatic vegetation that is classified as moderate coverage.

Marginal aquatic vegetation was observed along significant areas of the shoreline of the lake. The predominate species was torpedo grass which covered large areas of the shoreline. Clumps of wild taro were widely scattered around the shoreline. Bulrush and fiddleleaf were also found in a few locations.

Watershield and fragrant water lily were prevalent in the back of some of the coves and the upper end of the lake. The density of these plants ranged from widely scattered in some areas to dense coverage in areas of severe infestation. Creeping water primrose, alligator-weed, pondweed, southern watergrass, and American lotus were found in a few locations on the lake. Most of the emergent vegetation was found in the back of the coves and on the upper end of the lake in water less than 3 ft. deep. Occasionally emergent vegetation was found growing in 5 to 6 ft. of water.

Submersed vegetation was present out to depths of approximately 8 feet on the lower end of the lake and depths of 5 feet on the upper end. The major species were bladderwort, variable-leaf milfoil, muskgrass, naiad, and widgeon grass. Hydrilla was found occasionally on the lower end of the lake but became less abundant as one moved up the lake and was not observed upstream of the Piney Woods Road Bridge (Bienville Parish Rd. 676) during this survey. No large patches of hydrilla were noted and it was not found topped out in the water column. Hydrilla is estimated to comprise approximately 5% of the submerged vegetation on the lower end of the lake or roughly 18 acres if it were consolidated.

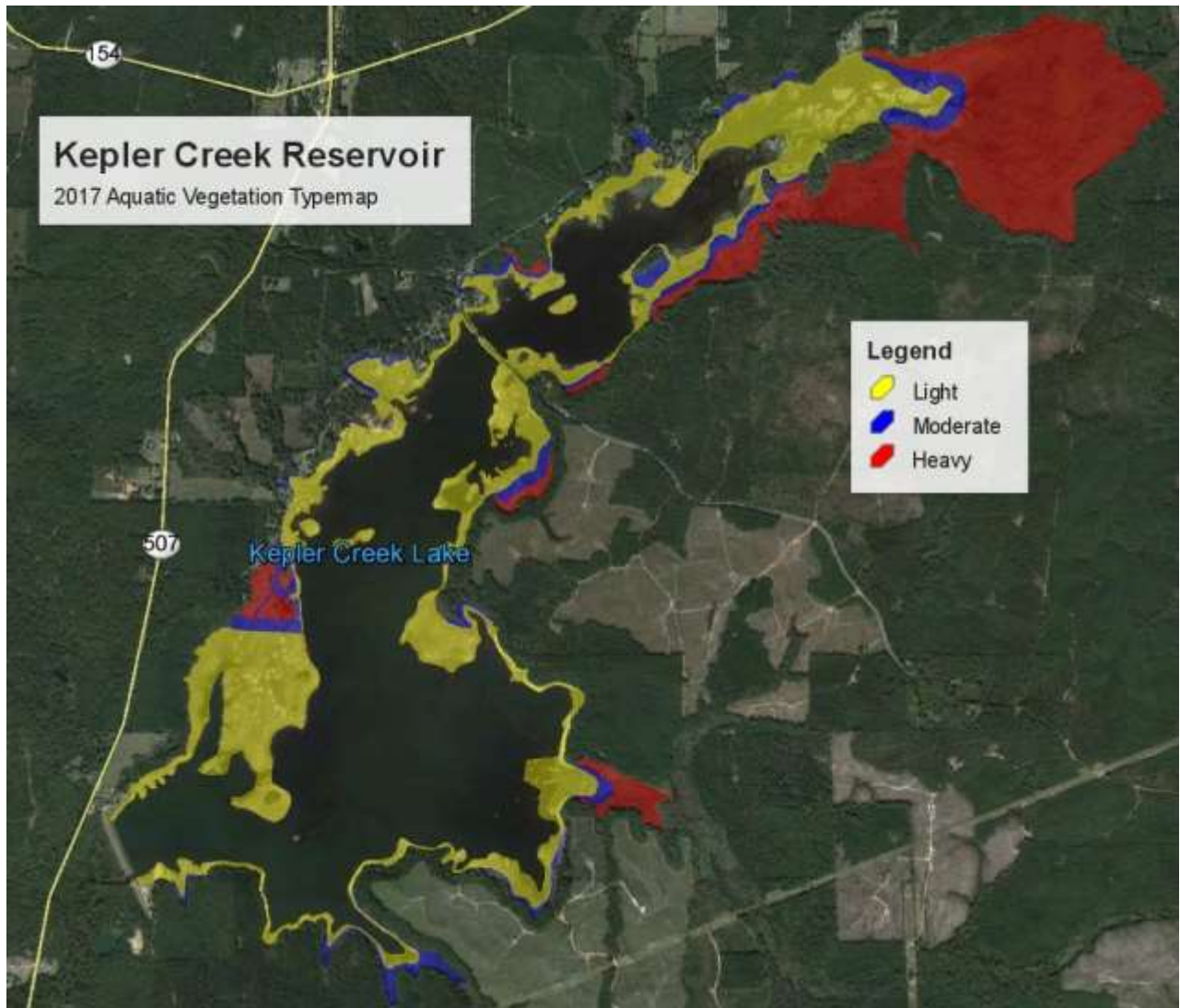
Giant salvinia was found in most of the areas where the vegetation coverage was classified as heavy. Some of these areas contained solid mats of giant salvinia where in other areas the giant salvinia was interspersed with the emergent and floating vegetation. Some mats and individual plants were found drifting down the lake following heavy rains preceding the field survey. Total coverage of giant salvinia on the lake was approximately 150 acres. All stages of the plants were present. The majority of the giant salvinia observed appeared to have been treated with foliar herbicide by contract sprayers who had been on the lake prior to field observations being conducted.

Discussion

Giant salvinia was discovered on Kepler Creek Reservoir in 2009. Foliar herbicide applications have been ongoing as needed since the plant was discovered. Prior to the type map survey, LDWF had treated 270 acres of aquatic vegetation on Kepler Lake including one large scale contract. The contract spray effort broke up large mats of giant salvinia which were then flushed down the lake following heavy rains.

Kepler Creek Reservoir underwent a drawdown from June 15, 2014 through the end of November 2014. Vegetation coverage was greatly reduced following this drawdown. The coverage of submerged vegetation remains lighter than what is historically observed following a drawdown. It is not certain, but it is likely that the two thousand triploid grass carp which were stocked by the Kepler Creek Recreation and Water Conservation District (KCRWCD) in 2009 and the additional 1,500 triploid grass carp which were stocked by LDWF in 2013 have impacted the return of

submerged vegetation in Kepler Lake. Environmental conditions may also have impacted submerged vegetation in Kepler. During the past two years there has been extremely rainy conditions during the growing season. This may have had an effect on water clarity which in turn impacted the submerged vegetation



Kepler Creek Reservoir
Bienville Parish, LA
Aquatic Vegetation Assessment
July 16 & 18, 2018

LDWF biologist, James Seales, conducted an aquatic vegetation assessment on Kepler Creek Reservoir on July 16 & 18, 2018. The lake was approximately 4 inches below pool stage at the time the survey was conducted. The water color was moderately stained with a light plankton bloom.

Total coverage of aquatic vegetation on Kepler Lake was approximately 750 acres or 39%. Giant salvinia was difficult to find with the exception of one area attached to the lake through culverts under a road. It appears that there was less than 5 acres of giant salvinia on Kepler Lake at the time of the survey. Hydrilla has increased since the type map survey conducted in 2017 and is found in most areas where submersed vegetation is present. Hydrilla would cover approximately 95 acres if it were consolidated, but was found throughout the 750 acres that contained aquatic vegetation. Hydrilla was not found to be topped out or in large mats anywhere in the lake. Currently Kepler Lake has close to the optimum coverage of vegetation for fish production. There are several homes located adjacent to shallow water areas which have boating access issues due to the current vegetation levels.

The portion of the lake below the Piney Woods Rd. Bridge (Bienville Parish Rd. 676) had light to sparse coverage of submerged vegetation out to depths of approximately 6 feet. Only the extreme back ends of the coves and other extremely shallow areas had coverage that could be described as moderate to heavy. Primary submersed species included bladderwort, hydrilla, variable-leaf milfoil, slender spikerush, filamentous algae and fanwort. Eelgrass was occasionally noted during the survey. Hydrilla was found in most areas that contained submerged vegetation out to depths of approximately 4 feet. Hydrilla comprised about 10% of the submersed vegetation on the lower end of the lake.

Marginal aquatic vegetation was observed along significant areas of the shoreline in the area below the bridge. The predominant species was torpedo grass, but clumps of wild taro were widely scattered around the shoreline. Bulrush, water pennywort, fiddleleaf, fragrant water lily, watershield, pondweed, southern watergrass and American lotus were found in a few locations below the bridge along protected shorelines.

The area of the lake above the bridge contained light to moderate coverage of submerged vegetation out to depths of 6 feet. Approximately 60% of the area above the bridge contained some form of aquatic vegetation. The majority of the submerged vegetation was comprised of bladderwort, variable-leaf milfoil, hydrilla, and fanwort. Hydrilla was widespread on the upper end of the lake, but only mixed in with other species. Hydrilla was not observed on the north end during the type-map survey conducted in 2017. Hydrilla comprised about 15% of the submersed vegetation on the north end of the lake. Although not as prevalent, eel grass was also found on the upper portion of the lake.

Most of the emergent vegetation on the upper end of the lake was found in the back of the coves in water less than 3 ft. deep. The primary emergent plants found in this area were fragrant water lily, torpedo grass and watershield. Creeping water primrose, alligator-weed, pondweed, slender spikerush, southern watergrass and duckweed were also noted.